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Industrial Safety
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REPORT
OF
THE ROYAL COMMISSION
ON
INDUSTRIAL SAFETY

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Ontario. Royal Commission on Industrial Safety

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REPORT

OF

THE ROYAL COMMISSION

ON

INDUSTRIAL SAFETY

by
HIS HONOUR JUDGE P. J. McANDREW (Chairman)
Dr. J. DANVERS BATEMAN, Commissioner
G. RUSSELL HARVEY, Esq., Commissioner

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To His Honour

The Lieutenant-Governor of the Province of Ontario,

May It Please Your Honour:

By a Commission bearing date the 7th day of April, 1960, issued under the authority of *The Public Inquiries Act, Revised Statutes of Ontario, 1950, Chapter 308*, Your Honour did appoint the undersigned to be Your Commissioners,

> "to inquire into and report upon all statutes and regulations administered by the Department of Labour that govern the safety of workers with a view to the improvement, simplification, clarification and modernization of such statutes and regulations."

A copy of the Commission is attached hereto as Appendix "A".

Upon receiving the Commission we met to discuss procedure, and caused to be published in the public press at various places throughout the Province public notice of the issuance of the Commission, the scope of the inquiry, the dates and places of public hearings, and inviting the submission of briefs by persons and organizations interested in the inquiry.

A list of these publications is attached hereto as Appendix "B".

Public hearings were held at the City of Toronto, the City of Port Arthur and the City of Windsor on the following dates:

Toronto	June 2, 3, 9 and 10, September 15, 16, 22 and 23, October 13 and 14, 1960
Port Arthur . . .	October 28, 1960
Windsor	November 10, 1960
Toronto	November 17, 18, 24 and 25, December 2, 1960

At these hearings briefs and submissions were received from various organizations, and evidence was heard from a number of witnesses conversant with the problems of industrial safety. A list of the persons and organizations who so appeared is attached hereto as Appendix "C".

A list of the submissions and exhibits presented to the Commission is attached hereto as Appendix "D".

A short time before the issuance of the Commission an accident resulting in loss of life took place in the tunnel then under construction at Hogg's Hollow. As frequent reference is made to this tragedy in the evidence and in this Report, we annex hereto as Appendix "E" a copy of the Coroner's Jury Verdict at the inquest.

Mr. John A. Hoolihan was appointed Counsel to the Commission, and we desire to record our appreciation for the ability and diligence with which he discharged his duties and the valuable assistance rendered in the preparation of this Report.

The Commission was fortunate in securing the services of Mr. D. W. Mather to act as Secretary. His experience in these matters and the capable and courteous manner in which he performed his functions has greatly facilitated our work.

The Acts and Regulations coming within the scope of our terms of reference are as follows:

1. *The Boilers and Pressure Vessels Act and Regulations* thereunder.
2. *The Building Trades Protection Act.*
3. *The Department of Labour Act and Regulations* thereunder.
4. *The Elevators and Lifts Act and Regulations* thereunder.
5. *The Factory, Shop and Office Building Act and Regulations* thereunder.
6. *The Operating Engineers Act and Regulations* thereunder.
7. *The Trench Excavators Protection Act and Regulations* thereunder.

Our Report takes the form of some observations of a general nature on the various aspects of industrial safety and accident prevention, with pertinent recommendations, followed by a study of each of the aforementioned Acts separately, with proposed amendments and revisions.

Among some of the more important findings of your Commission is the need for a clearing house of safety activities in the Province. Accordingly the Commission recommends the establishment of an *Ontario Safety Council*, whose function would be advisory and whose authority would be limited to inquiry. This would make possible the effective co-ordination of accident prevention work with the enforcement of safety legislation and with the extensive field of voluntary safety effort that now exists.

Considerable evidence was heard regarding the function of the Accident Prevention Associations established under the authority of *The Workmen's Compensation Act*, and your Commissioners have concluded that the present system would function more effectively by placing the associations under the jurisdiction of the Workmen's Compensation Board and operating through an Executive Administrative Committee of the associations responsible to the Board.

Your Commissioners further recommend facilities for the establishment of management-labour safety committees at the plant level, and the licensing of contractors at a Provincial level. The importance of safety education is stressed.

Each of the Acts and regulations designed for the protection of workers is considered in detail in later sections of this Report, and numerous recommendations are made to simplify, clarify, and modernize the present legislation. Some of the Acts and regulations were found to be archaic and outmoded. This is particulary true of *The Building Trades Protection Act*, which is almost unknown and unenforced. Your Commissioners have recommended that this Act be repealed and replaced by a *Construction Safety Act*, incorporating Part 8 of the National Building Code.

The ultimate responsibility for the enforcement of the proposed *Construction Safety Act* and of *The Trench Excavators Protection Act* should rest with the Department of Labour, and the legislation should be amended accordingly.

The Factory, Shop and Office Building Act is generally antediluvian and, accordingly, it is recommended that much of the social legislation not relating to the safety of workers be reorganized elsewhere.

Evidence of defective construction of arenas is the basis for a recommendation that the plans for public buildings be submitted for departmental approval, and that such buildings be subject to periodic inspection.

The Operating Engineers Act dates from 1907, and subsequent amendments have been largely for the purpose of clarification rather than modernization. In view of the rapidly growing industrial technology in the Province, and the fact that your Commissioners are not experts on horse-power ratings and automatic equipment, it is recommended that an independent *Board of Review* be established to determine appropriate amendments to the Act consistent with modern industrial equipment.

Safety regulations relating to foundries and ionizing radiation have been formulated but not promulgated, and workers in these fields are not at present protected by legislation. Your Commissioners recommend that regulations covering these fields be implemented at an early date.

The highest accident frequency rate in the Province is in the logging industry, yet there is no legislation for the protection of workers in this field, as in sawmills. It is recommended that this deficiency be corrected by the adoption and enforcement of logging and sawmill regulations.

Revision of regulations relating to workers in compressed air is recommended based upon medical evidence heard and a comparative study of similar regulations in other jurisdictions. Particular reference is made to "bone-death" as a consequence of caisson disease.

Considerable evidence was heard on the explosive hazards of agricultural dust in grain elevators and flour mills, and a number of practicable recommendations were made that, if effected, will materially reduce the possibility of explosion. Similarly, your Commissioners have recommended several amendments to the other Acts and regulations for the protection of workers administered by the Department of Labour.

DEPARTMENT OF LABOUR

The principal functions of the Department of Labour, other than the administration and enforcement of safety legislation, are in the field of labour relations and the qualification of certain classes of tradesmen.

This Commission is concerned with the legislation administered by the Department relating to the protection of employees and the public. For this purpose, the Boiler Inspection Branch administers *The Boilers and Pressure Vessels Act and Regulations*; the Elevator Inspection Branch carries out the duties relating to *The Elevators and Lifts Act and Regulations*; the Board of Examiners of Operating Engineers supervises *The Operating Engineers Act and Regulations*; the Factory Inspection Branch has responsibility for *The Factory, Shop and Office Building Act and Regulations*, including the *Regulations* relating to *Grain Elevators*, as well as the *Regulations Respecting the Protection of Persons Working in Compressed Air, Tunnels, Open Caissons, Coffer Dams and Crib Work* under *The Department of Labour Act.*

Two other Acts administered by the Department are required to be enforced by municipal inspectors. These are *The Trench Excavators Protection Act and Regulations* and *The Building Trades Protection Act.*

This latter Act, designed for the protection of employees in the building trades, has been in the statute books since 1911. The evidence adduced before the Commission indicates that it has fallen into disuse, has seldom been enforced, and is practically unknown. The Act provides that in organized municipalities the council shall appoint inspectors to enforce it. The Act is administered by the Department of Labour, but the Department takes the position that it has no duty and no authority to supervise enforcement by local municipalities. To remedy this weakness, and to prevent recurrence, the Commission recommends that all Acts administered by the Department of Labour provide expressly that the Department shall have the duty and power to supervise enforcement by the local municipalities within the scope of their authority. This may infringe upon the local autonomy traditionally enjoyed by municipalities. However, the evidence heard by the Commission strongly indicates that without such supervision, inspection and enforcement by the municipalities tends to become a "hit-and-miss" affair.

No safety legislation, no matter how comprehensive or ably drafted, will protect the employees unless it is enforced; and enforcement requires adequate inspection that should include communication with the working force as well as the supervisory staff.

The testimony of the officers of the Department of Labour generally with respect to the adequacy of the Acts, their enforcement, and the number of inspections and inspectors required, indicates a degree of satisfaction that is inconsistent with the requirements of keeping pace with a rapidly growing industrial technology.

On tunnel and compressed air projects the Department of Labour inspectors are dealing to a large extent with graduate engineers who superintend the work; and engineer inspectors would have a greater advantage in their efforts to enforce safety regulations in this field.

It is recommended, therefore, that replacements and additions to the inspection staff responsible for tunnelling and compressed air be graduate

engineers, and that the salary schedule therefor be fixed comparable to the scale paid mining inspectors in the Province. It is further recommended that the salary schedule of all Department of Labour inspectors be reviewed and adjusted where necessary in order to maintain high standards of qualification of inspectors.

The Commission has heard evidence that in common practice when an inspector visits a plant or worksite his contact is with the foremen or those in a supervisory position, with the result that unsafe practices familiar to the working force are not brought to the attention of the inspector. The Commission recommends that employees should feel free, in fact should be encouraged, to bring to the attention of the appropriate inspector any unsafe conditions or practices which management fails to recognize or refuses to remedy. To this end, the name, address and telephone number of the inspector in charge, whether provincial or municipal, should be posted in a conspicuous place in each plant or worksite. The building permit should carry this information, where a building permit is issued. When an employee or a union representative makes a complaint to the Department of Labour or an inspector thereof, the inspector should consult with the employee or his representative forthwith. The Commission recommends that it shall be the duty of an inspector in such a case to inform all parties concerned, firstly, of his conclusions, and secondly, as to what action, if any, is to be taken. Finally, all parties involved should be given copies of any departmental directives issued as a result of the complaint.

The Commission is informed that the Department of Labour has from time to time published and distributed brochures describing the legislation administered and services provided by the Department. While this is commendable, it appears to the Commission that, with the recent large influx of employees not conversant with English, it is desirable that this service be expanded to include the preparation and distribution of brochures in French, Italian and Ukrainian, describing in narrative form the legislation and regulations relevant to safety and stressing the necessity for compliance therewith, and other matters conducive to industrial safety.

The Commission does not intend to derogate in any way from the fact that it is incumbent upon immigrants to learn English or French as quickly as possible. It is not necessary that the brochures or posters go into great detail; they should set forth the essentials concerning safety practices and hazards peculiar to the particular operation involved. The Commission recommends that all persons in responsible positions, such as foremen, lock tenders in compressed air work, and crane operators, be required to speak, read and write English or French.

IONIZING RADIATION

The increasing use of radioactive materials in industrial processes has had the effect of multiplying the sources of ionizing radiation, thereby creating another major hazard that must be controlled in the interests of safety.

Section 10 of *The Department of Labour Act* authorizes enactment of regulations in this field, and the Commission is pleased to note that the Department of Labour in co-operation with the Department of Health has already drafted regulations designed to control exposure to such radiation by regulating the storage, use, handling, transport and disposal of such materials with provision for warning signs, warning labels, monitoring and decontamination. We are informed that the draft regulations are still under review, with consideration being given to the problem of legislative jurisdiction.

It appears desirable and the Commission recommends that some regulations in this field be enacted as soon as possible, and that they be expanded in the light of further study and consultation between the legislative authorities involved.

SAFETY EDUCATION

It has been said, with some measure of truth, that accidents do not happen—they are caused, and their causes are twofold:

1. Things, using that term in its wider sense to include unsafe working conditions of every kind, and including dangerous plant, radiation, machinery and equipment.

2. Persons, including supervisors, foremen and workmen, who through lack of knowledge or by a careless attitude or unsafe conduct, constitute a hazard to themselves and others on the job.

Legislation and enforcement can do much to reduce the risk arising from dangerous working conditions. The same is not true of persons because proper attitudes can rarely be elicited from human beings by legislation. That requires education. The policing method can compel compliance, to some degree, with safety rules. The desired result, however, requires the inculcation in the persons involved of a proper understanding of the safety measures required and a desire to comply with them. In other words, self-correction and self-policing is the only effective path to safe living and safe working, and bringing this about requires the combined and co-operative efforts of labour and management in safety training and education.

Employers in industry are to be complimented upon their efforts in establishing a number of accident prevention associations as contemplated by Section 117 of *The Workmen's Compensation Act.* These associations have done notable work in safety education. By means of lectures, moving pictures, discussion groups and literature they have tried to make both employers and employees safety conscious. Their efforts, however, have not been entirely successful, for several reasons:

1. Unfortunately, some employers do not co-operate and do not follow the suggestions of the safety associations, which have no effective means of enforcing compliance.

2. In many instances the safety education program stops at the foreman level and fails to reach the man on the job.

3. In some cases the efforts of the safety associations have failed to elicit the full support of labour. The employee, not having representation in the safety association, regards the program as something forced upon him by management, as something in the formulation of which he has no voice, and in the administration of which he has no part.

In the opinion of this Commission these difficulties can be largely overcome by the combined and co-operative efforts of the safety associations and plant safety committees whose constitution and functions are described elsewhere in this Report. We see no valid reason why they cannot work together in harmony for the common purpose of bringing home to both employer and employees an understanding of the hazards involved in their particular industry and of the methods required to guard against such dangers, together with an appreciation of the necessity of constant self-correction and self-discipline in accident prevention. As to the reluctant employer, one of the duties suggested for plant safety committees is the sending to both the Workmen's Compensation Board

and the Minister of Labour of copies of minutes of meetings, complaints, investigations and recommendations, with special reference to recommendations not implemented.

We suggest further that consideration be given to the feasibility of introducing safety education in technical schools, so that students likely to enter industrial occupations will have some knowledge of the problems involved. This instruction may be given by means of illustrated lectures supplemented by appropriate explanations. In this way, the young person entering the industrial field will have at the outset some understanding of the serious consequences, both monetary and otherwise, attendant upon industrial accidents, and of the necessity for caution and vigilance for their prevention.

LICENSING OF CONTRACTORS

Representations by informed witnesses clearly indicate the need for legislation designed to require full recognition and observance of safety standards by all builders, contractors and sub-contractors in the building and construction industry.

A substantial number of contractors have established a commendable record of safety consciousness and high standard policies governing safety on their jobs.

On the other hand, your Commission is concerned with a growing area of irresponsibility characterized by the "fast-buck" or "fly-by-night" builders, or the unqualified and speculative newcomers whose record demonstrates a serious lack of knowledge of safety, responsibility, and respect for legislation.

The increasing intensity of competitive bidding creates and stimulates a special and unfair advantage for this irresponsible element. Decided savings may be effected by disregarding even minimum precautions against accident.

The irresponsible contractor avoids stabilization through collective bargaining. His contractual identity is not constant. To preserve his special advantage he must avoid all forms of restriction required in current standards of conduct and performance.

It is a reasonable assumption that, if unchecked, this element, enjoying special privileges, will seriously hamper and may well destroy the work and ability of responsible contractors to advance the cause of safety in construction.

Irresponsible employers, for either or both humane or economic considerations, should not be permitted to endanger existing or future concepts of socially desirable regulations. There is no evidence to indicate any improvement in attitude or willingness to develop self-regulation in this troubled area.

To what extent then can such dangerously selfish elements be required to comply within the framework of a free society? The cost of adequate inspection of work performed under such circumstances would impose an inequitable burden on the taxpayer.

Witnesses, possessing first-hand knowledge, advocated a system of licensing as the most effective method to ensure reasonable control of this problem.

If, after years of safety legislation, education, persuasion and example, such employers selfishly persist in evasion of the law, their right to operate in this industry should then be qualified by a requirement for adherence to the law in practice as a condition of licence and of the right to obtain subsequent building permits.

Some evidence was adduced of successful state licensing legislation in Florida and California. It appears that other states adopted the licensing principle in building and construction.

The Commission considered the many areas of special interest and peculiar problems characteristic of the building and construction industry.

Evidence clearly demonstrates that the failure of this industry in self-regulation is largely attributable to the tactics and policies of the irresponsible segments.

Present penalties for infractions are inadequate deterrents. Savings effected by evasion of the regulations more than offset penalties if, and when, infractions are detected.

The loss of a licence as the result of a record of failure to comply with safety regulations would clearly focus the actual area of responsibility for non-compliance. The safety record of the individual contractor should be given paramount consideration in deciding whether to grant, renew or cancel his licence.

The Commission recommends the adoption of legislation setting up a system of licensing for builders, contractors and sub-contractors in the building and construction industry.

In the light of the record of varying degrees of failure in municipal co-operation and safety administration, the licensing authority, as it is in California, vested in the state, should be vested in the Province.

The Commission considered the desirability of securing first-hand knowledge of such legislation and regulations, and the claimed record of achievement in the areas of safety, health, and public responsibility, but, in view of the Commission's proposed recommendation to establish an *Ontario Safety Council*, therefore it recommends such Council make a more exhaustive study in the course of its consideration and preparation of suggested regulations. In this connection, it would seem desirable that municipalities shall issue building permits to none other than properly licensed builders, contractors and sub-contractors.

The Commission specifically recommends that all government construction contracts shall include a clause whereby the builder, contractor and sub-contractor undertake to comply with all legislation, regulations and directives of the Department of Labour relative to safety.

It is essential that an adequate right of appeal be incorporated in the recommendation.

PLANT SAFETY COMMITTEES

A safety program aims at the prevention of accidents, and the value of the methods adopted is measured by the extent to which they achieve or approach that goal. In the view of the Commission, regulations, inspection, enforcement and instruction will fail to achieve their full purpose unless supplemented by the formation and effective operation of plant safety committees, that is, joint committees of management and labour at plant level directing their efforts to the promotion of safety in their particular situation.

The safety program developed in the St. Lawrence Power Project illustrates the beneficial results that can be achieved by such committees. That project was so varied in scope as to embrace nearly every type of construction activity with a large number of contractors and several thousand employees of diversified skills and trades. Pursuant to the provisions of collective bargaining agreements, safety committees were formed in all major work areas with membership drawn equally from labour and management. These divisional committees met weekly to discuss safety problems within their work areas. In addition, each such divisional committee sent two representatives, one labour, and one management, to the monthly meeting of the Central Safety Committee which met under the chairmanship of the Project Director to study safety problems on a project-wide scale. Representatives of the Ontario Hydro Accident Prevention Division, the Ontario Department of Labour and the Construction Safety Associations also attended. It became in effect a "Safety Parliament", and from this developed a safety attitude and spirit of co-operation between management and labour that achieved a highly satisfactory result.

In general, management takes the position that safety is the responsibility of management, that while employees are at liberty to offer suggestions, management through its foremen and supervisors is in the best position to administer a safety program and that therefore management should have exclusive authority in formulation and administration of safety and accident prevention measures.

With respect, the Commission is unable to accept this submission. In our view, the employee has at least an equal interest in accident prevention, and an important part in its promotion. As long ago as 1913 Mr. Justice Meredith in his Royal Commission Report on Laws Relating to the Liability of Employers, at page 15, stated in considering accident costs:

> "The burden which the workman is required to bear he cannot shift upon the shoulders of anyone else, but the employer may and no doubt will shift his burden upon the shoulders of the community, or, if he has difficulty doing that, will by reducing the wages of his employees compel them to bear part of it."

Whether the employer can shift the burden or not, it is for him at most a monetary consideration; whereas for the employee an accident means pain, suffering, disability and in some cases death, bringing to his family group the loss not only of a bread-winner, but also of a father and husband—a loss which money alone cannot compensate.

In his Royal Commission Report on *The Workmen's Compensation Act (1950)* Mr. Justice Roach stated at page 91:

> "The prevention of accidents in industry is a subject of no less importance than is compensation for injuries sustained as a result of such accidents.

It is infinitely more important that, where possible, an accident should be prevented than that it should be permitted to occur and the victim be compensated. It is therefore appropriate that an Act which provides compensation to the victims of industrial accidents should contain provisions dealing with the prevention of such accidents.

In my respectful opinion the present provisions of the Act dealing with accident prevention are not adequate and need revision.

Since accident prevention is of common interest to both employers and workmen it would seem logical that they should both actively participate in any organized system the purpose of which is to lessen industrial accidents. As between the two groups, it seems to me that the workmen are much more vitally interested than the employers. If a workman is maimed in an industry, the employer has to pay the compensation, but no monetary allowance can ever adequately compensate a workman who has to go through the balance of his life minus an eye, or a hand, or some other member.

My first criticism of the present system is that it does not provide any means which will ensure the active participation of labour in the work of accident prevention."

The fact is that a safety program based solely on regulations, slogans, posters and policing by inspectors, leaves something to be desired, and that *something* is to make safety a personal problem to the employees on the job and thereby generate an attitude that makes the employee a stern policeman of himself and his fellow-employees. This cannot be achieved so long as he regards the safety program as something imposed upon him by management.

To develop an active participation by labour in the work of accident prevention, the Commission recommends that *The Workmen's Compensation Act* be amended by adding thereto a provision to the following or similar effect:

1. The management of every operation in which 20 or more employees are employed shall on its own initiative, or when so requested by a majority of the employees, form and maintain an accident prevention committee consisting of not more than 12 and not less than four members to be designated in equal numbers by the employees and the employer. Employee representatives shall be restricted to regular employees having at least one year's experience in the operation.

2. The general duties of the accident prevention committees shall be to discover and adopt the ways and means best suited to secure the advancement of safety and the prevention of accidents in the plant or place of employment, and, without restricting the generality of the foregoing:

(a) to hold regular meetings at least once a month for the discussion of current accidents, and means of preventing recurrence thereof; to consider reports of investigations and inspections and other matters relevant to the promotion of safety, and to make recommendations in respect thereof;

(b) to make a complete inspection not less than once a month of the plant or place of employment for the purpose of determining dangerous conditions, checking unsafe practices, and receiving complaints or recommendations in respect thereof;

(c) to investigate promptly all serious accidents, unsafe conditions and dangerous practices, including accidents which might have caused serious injury, whether or not such injury actually occurred;

(d) to keep proper minutes of meetings and accurate records of all complaints, investigations and recommendations, and to send copies thereof to the Workmen's Compensation Board and the Minister of Labour. The minutes of meetings shall record the action taken in connection with recommendations previously made, and when no action is taken shall indicate the reason therefor;

(e) to inspect lighting arrangements, fire conditions and fire-fighting equipment in and about the plant, and to make appropriate recommendations in respect thereof;

(f) to inspect machinery, equipment and accident prevention devices from time to time, and make recommendations in respect thereof;

(g) to co-operate with the appropriate accident prevention association in developing a safety education and training program by means of lectures, demonstrations, discussion groups and other suitable methods designed to instruct the employees in the dangers of their particular industry and precautions and methods advisable in guarding against such hazards.

Notwithstanding that *The Workmen's Compensation Act* is outside the scope of our terms of reference, we are of the opinion that the proposed amendments are more suited to inclusion in that Act than in any of the legislation administered by the Department of Labour, and believe the matter to be of sufficient importance to justify the recommendation. It is to be noted that these proposals are similar to recommendations made by Mr. Justice Roach in his Report referred to above.

ACCIDENT PREVENTION ASSOCIATIONS

The main foundations of industrial safety in Ontario are related either to legislation for the safety of employees administered by the Department of Labour or the Accident Prevention Associations established under the authority of Section 117 of *The Workmen's Compensation Act*. The legislation and regulations of the Department of Labour are considered in detail in later sections of this Report. Whereas the subject of accident prevention is not specifically within the terms of reference of this Commission, no adequate investigation of legislation for the protection of workers can be conducted without consideration of the complementary activities in the field of safety undertaken by the accident prevention associations.

It has long been recognized that minimum standards of regulatory authority and enforcement are necessary both for the protection of the worker and the public in general; and the more progressive jurisdictions throughout the world have established such standards.

Ideally the objectives of industrial safety should be accomplished within the framework of the minimum amount of restrictive legislation, and without furthering the trend of regimentation of industry by government. It is recognized that within industry there is an irresponsible and unco-operative segment to which both safety legislation and enforcement are particularly directed. The problem is one of controlling this element without unduly imposing a restrictive burden on responsible and co-operative employers. In the recommendations that follow, relating to specific Acts and the regulations thereunder, the principal objective has been to search out deficiencies which, when corrected by amendments to the Acts, will result in a minimum regulatory standard of safety consistent with practicable inspection and enforcement. Improvement of industrial safety above this level can only be accomplished by education and by co-operation between management and labour.

Section 117 of *The Workmen's Compensation Act* provides for the formation of employers' accident prevention associations, eight of which have been formed and are functioning today. With one exception, these associations are "housed" in the Workmen's Compensation Board headquarters, and receive annually from the Board grants that now aggregate about $1,500,000. The existing associations are as follows:

Lumbermen's Safety Association;

Ontario Pulp and Paper Makers Safety Association;

Mines Accident Prevention Association of Ontario;

Industrial Accident Prevention Associations;

Transportation Safety Association of Ontario;

Ontario Highway Construction Safety Association;

Electrical Utilities Safety Association;

Construction Safety Associations of Ontario.

Section 117 of the above-mentioned Act reads as follows:

"(1) The employers in any of the classes for the time being included in Schedule 1 may form themselves into an association for accident prevention and may make rules for that purpose.

(2) If the Board is of opinion that an association so formed sufficiently represents the employers in the industries included in the class, the Board may approve such rules and, when approved by the Board and by the Lieutenant Governor in Council, they are binding on all the employers in industries included in the class.

(3) Where an association under the authority of its rules appoints an inspector or an expert for the purpose of accident prevention, the Board may pay the whole or any part of the salary or remuneration of such inspector or expert out of the accident fund or out of that part of it that is at the credit of any one or more of the classes as the Board may deem just.

(4) The Board may in any case where it deems proper make a grant towards the expenses of any such association.

(5) Any moneys paid by the Board under this section shall be charged against the class represented by such association and levied as part of the assessment against such class.

(6) The word 'class' in this section includes sub-class or such part of a class or such number or classes or parts of classes in Schedule 1 as may be approved by the Board."

Since the Act was promulgated in 1915 it has never been clarified whether the "rules" referred to in Subsections (1), (2) and (3) are rules of organization of the associations or safety rules that may be imposed by the associations on their related industrial groups. In this respect the Act has not been clear for more than 45 years, and, even if safety rules were formulated and applied, the Act provides no authority for their enforcement.

The attitude of the associations is one of complacency with respect to their present functions, which are largely educational. Some of the associations employ inspectors or safety counsellors; but the inspectors, who are representatives of the employers, have no authority to enforce safety measures. As an example, we are informed that a Construction Safety Association inspector at the inquest following the Hogg's Hollow tragedy, testified that he clocked the rate of decompression in an air-lock at the Hogg's Hollow tunnel project at 28 seconds, a dangerously short interval. Yet no steps were taken to enforce the required rate of seven and one-half minutes for the prevailing pressure, or even advise the superintendent on the project.

Section 117 of the Act provides for the accident prevention associations to make rules that "are binding on all the employers in industries included in the class." Persons drafting the Act obviously contemplated that rules would be made; yet few have been made, and none enforced, due no doubt to the ambiguity of the meaning of "rules" as hereinbefore explained. The complaint of labour is that the work of the accident prevention associations does not penetrate below the rank of foreman, and this is a valid complaint.

The Honourable Mr. Justice W. D. Roach, in his inquiry into *The Workmen's Compensation Act (1950)* stated:

"My first criticism of the present system is that it does not provide any means which will ensure the active participation of labour in the work of accident prevention.

My second criticism is that the relationship between the Board and the associations is much too remote."

There is no question that the safety educational work of the associations is good as far as it goes. The machinery is available under the Act to extend safety training through all echelons of labour, and, possibly, to make and enforce safety rules. Each class of industry, through its association, is at the present time in a position to police but not penalize the irresponsible employer elements within the class; and the Board has the power of persuasion by levying additional assessments on employers who flagrantly violate safety regulations. None of these provisions is being effectively utilized. Ideally, the associations are in a position to encourage the formation of management-employee safety committees, which is preferable to compulsion by legislation; but there is no evidence that they have done so.

To quote again from Mr. Justice Roach:

> "The prevention of accidents in industry is a subject of no less importance than is compensation for injuries sustained as a result of such accidents. It is infinitely more important that, where possible, an accident should be prevented than that it should be permitted to occur and the victim be compensated. It is therefore appropriate that an Act which provides compensation to the victims of industrial accidents should contain provisions dealing with prevention of such accidents."

From these considerations it appears that the accident prevention associations are not functioning in the manner contemplated by the Act, and, at present, the associations are isolated islands of autonomy having no responsibility to report to or even advise the Board.

This situation was recognized more than 10 years ago by Mr. Justice Roach, who recommended the following amendments to the Act, the essential features of which are repeated here.

> "116*a*.—(1) Notwithstanding anything contained in section 116 the whole subject of accident prevention in all the industries included in Schedule 1, except mining, shall be under the jurisdiction of the Board.
>
> (2) Where, heretofore, any association has been formed under the authority of section 116 (1) and the Board is of the opinion that such association is effectively carrying out the work of accident prevention in the industries represented by that association, it may adopt that association as its agent for the purpose of carrying out such administrative duties as the Board may from time to time prescribe.
>
> 116*b*.—(1) The Board shall have power,
>
> (a) to investigate from time to time employments and places of employment within the Province, and determine what suitable safety devices or other reasonable means or requirements for the prevention of accidents shall be adopted or followed in any or all employments or places of employment;
>
> (b) to determine what suitable devices or other reasonable means or requirements for the prevention of industrial diseases shall be adopted or followed in any or all employments or places of employment;
>
> (c) to makes rules and regulations, whether of general or special application, and which may apply to both employers and workmen, for the prevention of accidents and the prevention of industrial diseases in employments or places of employment;

(d) to establish and maintain museums in which shall be exhibited safety devices, safeguards, and other means and methods for the protection of the life, health, and safety of workmen, and to publish and distribute bulletins on any phase of the subject of accident prevention;

(e) to cause lectures to be delivered, illustrated by stereopticon or other views, diagrams, or pictures, for the information of employers and their workmen and the general public in regard to first aid and in regard to the causes and prevention of industrial accidents, industrial diseases, and related subjects;

(f) to appoint advisory committees, on which employers and workmen shall be represented, to assist the Board in establishing reasonable standards of safety in employments, and to recommend rules and regulations;

(g) to charge any class, sub-class, or employer with the cost of any expenditure made under this Act for the benefit of that class, sub-class or employer, including the cost of investigations, inspections, and other services rendered for the prevention of accidents."

The basic reason for the proposed amendment was to establish a chain of command by placing the accident prevention associations under the jurisdiction of the Board in order that accident prevention efforts could be co-ordinated. This can be accomplished most effectively by a co-ordinating committee. This Commission recognizes that the associations, as they presently exist, are autonomous units authorized under the Act, but not responsible to the Board, which provides them with operating funds.

The work of accident prevention, if co-ordinated, can excel in safety education; but this Commission is convinced that the present system is not functioning sufficiently well to realize the full potential for safety education and training that is available.

Therefore, in order to achieve this objective, the Commission recommends:

1. That the accident prevention associations be placed under the direction and jurisdiction of the Workmen's Compensation Board.

2. That there be formed an Executive Administrative Committee of these associations, with a full-time representative of labour, to co-ordinate and supervise the activities of the associations.

3. That the Committee be appointed by the Board, and be responsible to the Board.

Throughout all hearings conducted by the Commission not a shadow of doubt appeared as to the common, widespread and sincere desire for an intensified maximum effort in the prevention of deaths, incapacitation, mutilation and losses suffered directly and indirectly by the victims of accident and their dependants.

Except in national emergency rarely do we find this degree of common accord in all sections of society. Can this potential be given more effective government direction?

Safety consciousness cannot be imposed. Attitudes cannot be legislated. Public interest, education, integration of effort and inspiration are the keys to future progress above and beyond the basic legislated minima of safety requirements.

Within the enthusiasm of society's increasing capacity for self-regulation will be found the resources and creative ideas for a program based on education. An informed witness told the Commission, "We have gone as far as we can go by enforcement." Significant advances in the field of safety will be made by virtue of enlightened safety education.

Evidence on the record of accident prevention through safety education discloses a basic fault. No central public authority, advisory or otherwise, exists for the purpose of policy co-ordination. It is proposed that the effectiveness of voluntary associations would increase through association with, and guidance in basic policies by, a central agency.

Evidence of outstanding success in safety education and administration on two major construction projects in Ontario was submitted in support of the remarkable benefits to be obtained through labour-management joint effort. Contractor participation in the joint safety program was a condition of the contract.

Although the need for compulsion will continue as the only effective method to accomplish compliance from a considerable segment of industry, nevertheless, this Commission is convinced that a vast potential of untapped interest and enthusiasm exists that may well respond to encouragement and opportunity to serve in voluntary support of planning education and improving legislation.

Although Ontario may well feel proud of its legislation and splendid administration for workmen's compensation and rehabilitation following accident, the area of greatest challenge is, and will remain, accident prevention.

If, then, education holds such great promise for improvement, let there be guidance and enlarged opportunity for the practical utilization of such general enthusiasm for accident prevention.

The Commission has received many representations for a centralized safety authority on which industry, government, and labour would be represented. There was, however, no unanimous recommendation as to how such an authority would be established. The various possibilities suggested were: (1) an authority established within an existing government department and, in particular, the Department of Labour; (2) an authority established under the Workmen's Compensation Board; (3) an authority established as an independent board or

commission. There were also differing opinions expressed as to whether the authority should supervise the safety legislation of departments other than the Department of Labour, as, for example, *The Mining Act* and Rules.

Within the Department of Labour and under *The Workmen's Compensation Act* there already exists the machinery, which if effectively utilized and applied, can realize the objectives of a central safety authority without the creation of an additional regulatory organization. In the recommendations that follow, it is considered that the primary objectives of both labour and management with respect to safety can be met by the establishment of minimum standards through legislation together with their vigorous enforcement, and by education and training in the field of accident prevention penetrating through all strata of workers.

The superposition of a regulatory authority over the existing enforcement and accident prevention machinery would seriously disorganize the present establishments devoted to safety and the protection of the worker and, in particular, would lead to the danger of alienating an extensive voluntary effort in the field of safety education and training. It is recognized, however, that some form of co-ordination between those responsible for drafting and enforcing safety legislation, the accident prevention associations, and safety programs initiated by industry, is desirable.

To this end the Commission recommends the establishment of an *Ontario Safety Council*, of possibly seven members, comprising representation from industry and labour and related interests associated with industry, including medical, engineering and other professions. It is to be stressed that the function of the Council would be advisory, and its authority would be restricted to inquiry and recommendations.

Upon establishment, the *Ontario Safety Council* may conduct a continuing study of all legislation and regulations pertaining to accidents and prevention, industrial health and hygiene, safety standards, inspection and enforcement, and make recommendations for legislative amendments.

The advantages of implementing this recommendation are many. In a rapidly growing industrial technology, such as ours, one of the functions of the Council would be to determine that safety legislation is being continually reviewed and modernized. As the present inquiry has determined, administrative branches of government are often reluctant to disturb the *status quo* as a result of which the Acts and regulations for the protection of workers become archaic and outmoded. The very existence of a Safety Council would do much to overcome the complacency towards the adequacy of existing legislation and its enforcement.

Labour, with membership on the Council, would then be represented at the highest level in safety matters.

The Council would be in a position to assist in the co-ordination of the work of the accident prevention associations with the voluntary safety effort, and in the integration of accident prevention work with the administration of safety legislation.

Within the Council all channels of enthusiasm for education would find enlarged opportunity for development and expression.

In particular, the Commission recommends that a full report of all inquests held in connection with industrial accidents be sent to the Safety Council for its information and consideration.

The Commission proposes that recommendations by the Safety Council be (a) made directly to the appropriate Minister, and (b) that the Annual Report of the Safety Council be tabled in the Legislature.

Although beyond the terms of reference, the Commission can envisage enlargement of the area of interest and representation.

THE BOILERS AND PRESSURE VESSELS ACT

This Act is designed to protect the people of Ontario from the disastrous results of boiler explosions. The magnitude of this type of blast was illustrated by a boiler explosion in Toronto in June, 1958, which demolished part of a substantial apartment building, and killed the janitor. It is a tribute to the Boiler Inspection Branch of the Department of Labour that boiler bursts are almost unknown in Ontario.

As a result of the operation of this Act, all sizable boilers in operation in the Province are inspected annually. This Branch also inspects the proposed design of new boilers. Field inspectors examine boilers or pressure vessels at three stages of their construction. Manufacturers must use approved methods of welding. In addition, certain types of boilers and pressure vessels must be inspected and demonstrated after installation and before operation.

As a result of the accelerating growth of industry in Ontario, administration of the Act requires the appointment of additional inspectors more frequently than in the past. A large proportion of inspection is the responsibility of inspectors appointed by insurance companies. While this arrangement is working with some degree of success, the Commission believes that the Department of Labour should have more control over insurance company inspectors. Firstly, these men should become "inspectors" within the meaning of the Act. Thus it will be necessary to broaden the definition of "inspector", in Section 1, Subsection (14). Section 28, Subsection (2) should then be repealed. This subsection now provides that,

> "where a boiler or pressure vessel is insured, it is exempt from annual inspection by inspectors appointed under this Act and its owner is exempt from the payment of fees as prescribed for such inspections while the insurance is in force, but the Minister may nevertheless require the boiler or pressure vessel to be inspected by an inspector at any time."

As all insurance inspectors who inspect boilers would become "inspectors" within the meaning of the Act, Section 28 (2) would be unnecessary. Similarly, Section 23, Subsection (1) which now says,

> "Subject to Subsection (2) of Section 28, every boiler operated or pressure vessel used in Ontario shall be inspected by an inspector at least once annually",

should be amended by deleting therefrom the words "Subject to Subsection (2) of Section 28".

Since the safety of many working people and other citizens of Ontario depends upon proper inspection of boilers, the Commission feels that the Minister of Labour should have the power to suspend or cancel a certificate of competency of any inspector whose work is unsatisfactory. The proposed amendments would achieve this object.

Section 2, Subsection (1) (a) exempts from the operation of the Act,

> "a boiler situate in and used only to heat a building or structure that normally provides separate dwelling accommodations for not more than four families."

Subsection (1) (e) of Section 2 similarly exempts low pressure boilers having a heating surface of 30 square feet or less. The Commission recommends that

Subsection (1) (a) of Section 2 be repealed, because the relevant criterion is the size of the boiler and not the number of families housed in the particular building.

Subsection (2) of Section 4 states,

> "No person shall be appointed or act as an inspector who has any direct or indirect interest in the manufacture, sale or installation of boilers, pressure vessels or plants."

The Commission agrees. This prohibition should be made part of *The Department of Labour Act*, and should apply to all Acts administered by this Department.

Section 8 of the Act extends broad powers to inspectors:

> "An inspector may by notice in writing require the attendance before him of any person at the time and place named in the notice and examine such person under oath regarding any matter pertaining to the construction, installation, operation, maintenance and repair of a boiler, pressure vessel or plant, or in respect of an accident arising out of its use or operation."

Inspectors should not be judges. This power should be limited to the chief inspector.

Under Clause (e) of Section 11, an inspector may require the owner, chief engineer or other person responsible for a boiler, pressure vessel or plant to do anything the inspector deems necessary to ensure a proper inspection. In addition, the inspector should have the power to order such a person not to do anything which might hinder a proper inspection.

Subsection (3) of Section 28 is as follows:

> "Every insurer shall file with the chief inspector, within thirty days after the inspection has been made, a copy of the report of the annual inspection of every boiler and pressure vessel insured by him over the signature of the person making the inspection."

These reports should be filed by the inspector involved within 21 days of the time of the inspection. Any inspector who does not file such a report within 21 days should lose his certificate of competency. These amendments will place the responsibility squarely on the shoulders of the inspectors, particularly insurance company inspectors, who will therefore be more diligent in their work.

Under Section 48, the maximum penalty for an offence under the Act or regulations is $500 and the minimum penalty $25. As the inclusion of this minimum penalty is simply an invitation to magistrates to levy a fine of $25, there should be no minimum penalty. As the proper enforcement of the Act is vital to the safety of many persons, the maximum penalty should be increased to $1,000.

Under Section 5 of the Act, no person may inspect a boiler, pressure vessel or plant who does not hold a certificate of competency. The Minister of Labour may suspend or cancel any certificate of competency for such reasons as are prescribed by the regulations. According to the regulations, the inspector must be untrustworthy, wilfully negligent in making inspections or must have knowingly falsified an inspection report before he can be disqualified. The word "wilfully" should be deleted from the regulations. Any negligent inspector should be dismissed.

Finally, the Commission recommends that the Department of Labour should be careful to ensure that there are enough inspectors to carry out at least one inspection of every boiler, pressure vessel and plant each year.

THE BUILDING TRADES PROTECTION ACT

This Act was originally passed in 1911. It is designed to protect men constructing buildings of all types. As hundreds of thousands of men are involved in this type of endeavour, the Act is extremely important. The evidence indicates that, with few exceptions, the Act is completely unknown throughout the Province. Municipal officials in several cities and townships had never heard of it. Similarly, union leaders did not know of the existence of the Act. Mr. D. F. Hamilton, Secretary-Treasurer, Ontario Federation of Labour, did not know of any complaint ever made by a union with respect to the area covered by the Act. Mr. M. H. Nicols, President of The Provincial Building and Construction Trades Council of Ontario, an organization with some 50,000 members in the building trades, did not know of the Act. He stated, "No union that I know of, knew of it."

The fact is that this important Act has not been enforced in the Province for many years, if ever. Section 2 of the Act states as follows:

> "The Council of every city, town, township and village shall, by by-law, appoint a sufficient number of competent persons to be inspectors for the purpose of enforcing this Act in the municipality."

The evidence indicates that only in the City of Toronto has such a person been appointed an inspector. The Department of Labour takes the position that enforcement of the Act is solely the responsibility of municipalities. The Commission disagrees. Whenever a department of government is given the responsibility for the administration of a statute, it is surely desirable that the department so charged take the necessary steps to have the legislation properly enforced and recommend amendments from time to time as changing conditions dictate. The Act has only been amended once in its 50-year history. It is unenforced and unknown—"The world forgetting, by the world forgot."

The Department takes the view that it is the responsibility of the various municipalities to find out what the law is and apply it. The Commission does not agree with this view. Subsection (1) of Section 3 of *The Trench Excavators Protection Act* is virtually the same as Section 2 of *The Building Trades Protection Act* quoted above. Under the Trench Act, the Department of Labour has made remarkable progress with the various municipalities. At the time of writing, all of the municipalities in Ontario have appointed inspectors under the Trench Act. The Department of Labour has written and informed them of the existence of the Trench Act. It has even sent draft by-laws to many municipalities to be certain that they appointed trench inspectors. Paradoxically, the Department has not pursued the same policy to secure enforcement by municipalities of *The Building Trades Protection Act.*

Mr. A. G. MacDonald, Comptroller, Workmen's Compensation Board, informed the Commission that recently there has been a marked increase in the number of compensable accidents in the construction industry in Ontario, and presented the Commission with a table of accident frequency rates, Ontario and all Canada, 1955 to 1959 inclusive. This points out the need for up-to-date legislation in this field. A copy of this table is attached hereto as Appendix "F".

The Commission recommends that *The Building Trades Protection Act* be repealed and replaced by a new Act. In view of the melancholy history of the present Act, the new Act should have a new name, such as "*The Construction*

Safety Act". The new Act must clearly state that the ultimate responsibility for its enforcement lies with the Department of Labour. The Commission appreciates that such enforcement may be difficult without infringing upon municipal autonomy, but the history of this Act underlines the necessity for the granting of such authority to the Department. To facilitate the task of enforcement for the Department, a system of annual returns should be inaugurated. Each year, the Department should send a form of return to every municipality in the Province. The municipalities should be required to complete the return and file it with the Department within 30 days of its receipt. The return should state:

(1) The name of the municipal inspector.

(2) The number of building inspections made during the preceding year.

(3) The number and causes of accidents in the building trades field for that period.

(4) The number, type and result of any prosecutions conducted by the municipality under the Act.

(5) The number of work suspensions ordered.

It is essential that enforcement of the Act should be uniform throughout the Province. The effectiveness of the Act in achieving a reduction of accidents in the construction field will depend in very large measure upon the personal qualifications of municipal inspectors appointed for its enforcement. The Department of Labour should assist the municipalities in the holding of courses and training for municipal inspectors.

The Commission has a final recommendation to make as regards the question of enforcement of this Act. The maximum penalty for an offence contrary to the Act is now $50. This sum is too low, and should be increased to $1,000.

As a result of the dearth of modern legislation dealing with the question of the safety of construction employees, the Commission sought the advice of experts in this field. Brigadier Jean Paul Carrière, a professional engineer, and Executive Vice-President of Franki of Canada, foundation specialists, testified. He is also Chairman of the Sub-Committee charged with the revision of Part 8 of The National Building Code under the aegis of The National Research Council. In addition, a number of directors of the Toronto Builders Exchange who had studied *The Building Trades Protection Act* and the National Research Council of Canada Code of Construction Safety Measures, were represented before the Commission by Mr. W. A. Bentley, a professional engineer who has had 33 years' experience, primarily with structural steel. Brigadier Carrière and Mr. Bentley appeared as expert witnesses at the request of the Commission. Furthermore, the Commission heard from a number of municipal building inspectors and trade union representatives representing thousands of employees in the construction industry. These witnesses were unanimously of the opinion that a revised version of *The Building Trades Protection Act* is essential to the safety of building trades employees. They made many helpful suggestions about the subjects which should be included in such an Act. These witnesses were almost unanimous in endorsing the adoption of the Construction Safety Measures, being Part 8 of the National Building Code of Canada prepared by the National Research Council, and that it should become part of the law of Ontario. The Commission therefore recommends that the new *Construction Safety Act* should include the Code of Construction Safety Measures, possibly

in the form of regulations passed pursuant to the Act. Certain parts of the Code should not be included in the new regulations. For example, it terms itself a by-law. Also, it makes a number of references to "administrative officials", which should be deleted. As *The Construction Hoists Act* adequately covers hoists and elevators, that section of the Code should not be included in the new regulations. Basically, however, this Code is excellent, and if adopted and properly enforced it should substantially decrease the number of construction accidents which occur in the Province. Major topics in the Code are:

general provisions;
housekeeping;
handling and storing of materials;
temporary services;
excavation;
construction equipment;
hoists and elevators;
scaffolds;
ladders;
temporary flooring;
stairs and ramps;
guardrails and toeboards;
formwork;
demolition, and
first-aid.

A copy of the index of the Code of Construction Safety Measures is annexed as Appendix "G" to this Report.

On May 27, 1961, two men were killed while working at the Toronto subway project when bracing of forms prepared for the pouring of concrete collapsed. The Coroner's Jury found that there was a lack of adequate bracing of the formwork. It stated that the bracing was not proper and that it was improperly installed. The first recommendation of the jury was as follows:

> "That the Provincial Government of the Province of Ontario adopt and rigidly enforce the National Building Code, 1961 Edition, and add to or amend such code to contain the following provisions:
>
> > A. That all construction in the Province of Ontario be carried out under the National Code, and/or municipal codes or by-laws, where such codes are in effect."

The Commission received a copy of the verdict of the jury from the Department of the Attorney-General, and did not hear any evidence concerning this accident. However, it is apparent from the verdict of the jury, a copy of which is attached hereto as Appendix "H", that the jury believed that if Part 8 of the National Building Code had been enforced as part of the law of Ontario this accident would not have taken place.

Several years ago, in Toronto, a multi-storey building was being constructed with structural steel. Shortly before the steelwork was completed, this tall edifice collapsed like a deck of cards. No one was injured because the collapse occurred during a week-end. Over 100 men would have been in and about the building on a normal day. Apart from a few municipal by-laws, there is no law in Ontario which deals with the safety of high structural steel buildings in the course of construction, and the Code has no provision in relation thereto. From the standpoint of the safety of construction employees, it is essential that this situation should be remedied forthwith, and the Commission recommends that the Department of Labour draft a set of regulations dealing with this problem. These regulations should become a part of the new *Construction Safety Act.*

At the final hearing of the Commission, the Department of Labour made a number of useful suggestions as to provisions which should be included in the new *Construction Safety Act.* Many of these suggestions duplicate provisions in the Code of Construction Safety Measures referred to above. The Commission endorses the following suggestions:

1. The appointment of inspectors by,
   (a) the councils of organized municipalities, and
   (b) the Lieutenant-Governor in Council, for duty in unorganized or sparsely settled areas.
2. The establishing of the powers of inspectors together with right of entry to premises, and authority to investigate related matters.
3. The notification of inspectors by the employer in cases of accident, explosion, fires or other unusual incidents that may cause injury.
4. The provision of means of prevention or extinguishment of and protection from fire.
5. The specifying of a minimum age for employees in all or specified classes of work.
6. Sanitation for employees.
7. The use of protective devices on machinery and apparatus, and the guarding of dangerous places.
8. The use by employees of protective clothing and gear.
9. The maintenance of premises in a clean and orderly condition.
10. The inspectors' assistance in enforcing the regulations under *The Workmen's Compensation Act* regarding first-aid facilities.
11. Adequate lighting.
12. The posting of warning notices and abstracts of safety laws.
13. The prohibition of the operation of machinery within a specified distance of high voltage lines, unless the lines are de-energized, insulated or otherwise made safe.
14. The safe use and storage of powder-actuated tools.
15. The provision of life-belts, nets, life-lines and boats for persons working over water.
16. Adequate bracing and support of all structural components during their installation.
17. The notification of the local inspector forthwith, if any person is killed or seriously injured. Where such person is an employee, his employers shall give the notice, and where any other person, the owner of the land upon which the accident originated shall give the notice to the local inspector.
18. The preparation by every municipal inspector of a report at least annually, and, in any case, before January 31 next following the calendar

year covered by the report. The report shall be submitted to his municipal council and to the Minister of Labour, and include information heretofore specified.

19. The preparation of an annual report by a person in the Department of Labour, summarizing the information furnished to the Minister of Labour by the local inspectors, and the distribution of a copy of such report to every municipality.

20. Every engineer, architect or owner, as the case may be, incorporating in every written specification prepared by him and relating to work subject to this Act, a clause specifying that the person undertaking to do the work shall do it in conformity with this Act.

21. Sub-contractors and other persons on premises, where a contractor has undertaken to do work subject to this Act for an owner, being obliged to comply with safety rules which provide for a greater measure of safety than does this Act and which are imposed by the contractor at the site of the work, provided that such safety rules must be included as a condition of the contract or sub-contract, as the case may be.

Under Section 11 of the present Act, buildings less than three storeys in height are exempted from the provisions of Sections 6, 7 and 8. The Commission recommends that the entire new Act should apply to all buildings except farm buildings or buildings being constructed by their owners in person.

Section 7 of the Act deals with an archaic method of construction which is no longer in vogue. In the new Act it should be replaced by a section drafted in accordance with modern construction methods and standards.

Finally, the Commission wishes to reiterate that a modern, well-enforced *Construction Safety Act* is vital to the safety of the hundreds of thousands of construction employees in Ontario, and the need for such legislation is so urgent that we recommend such an Act be proclaimed at the earliest possible date.

THE DEPARTMENT OF LABOUR ACT

This Act deals with the structure of the Department of Labour, the powers of the Minister and Deputy Minister, and the duties of the Department and the Industry and Labour Board. Section 10 of the Act provides for regulations to protect persons engaged in compressed air work, the construction of tunnels and open caisson work and in the construction of coffer dams. This section also provides for regulations designed to protect workers from the effects of ionizing radiation used in industry or commerce.

At the present time, there is no Act or series of regulations specifically designed to ensure the safety of men working in the logging industry. Figures presented by the Workmen's Compensation Board indicate that the logging industry has an accident frequency rate which is approximately 50 per cent higher than any other industry or area in the Province. The relevant figures are set out in Appendix "F". The Director of Technical Services agreed that there is a need for regulations in this field.

The Commission recommends that logging regulations be drafted under *The Department of Labour Act*. These regulations should include the operation of sawmills. The Commission has not heard sufficient evidence on this subject to make definite recommendations regarding the details of the proposed regulations. Power saws and axes are said to be the two greatest sources of accidents, but more serious accidents may occur on floating logs and booms. The Act should be amended to authorize the Department of Labour, in consultation with the Department of Lands and Forests, to draft suitable regulations, and it is considered that with adequate enforcement the accident frequency rate in this field could be lowered considerably.

Another area in which there is no legislation protecting employees is flour mills. In the winter of 1960-61 a large mill in Port Colborne was shattered by an explosion and virtually destroyed by ensuing fire. As described elsewhere in this Report, comprehensive regulations deal with the operation of grain elevators. Both grain elevators and flour mills are subject to severe explosions caused by the ignition of agricultural dusts. Therefore, the Commission recommends that the Department of Labour draft a series of regulations designed to protect persons employed in flour mills throughout the Province. Mr. A. R. Morse, of the National Research Council, advocated this step at the time he testified before the Commission. The regulations should be enacted under *The Department of Labour Act* or *The Factory, Shop and Office Building Act*, and should be similar in many respects to the Grain Elevator Regulations.

Adequate safety regulations dealing with the safe operation of cranes are urgently required. Many persons have lost their lives through electrocution when crane booms or cables have come into contact with hydro wires. When it is absolutely essential that any part of a crane should be closer than 10 feet to a dangerous power line the power in that particular line should be cut off, re-routed, or a suitable insulation provided. The Commission was told that if these steps were taken, 90 per cent of this type of accident would be prevented. The Commission recommends that the Department of Labour draft a series of suitable regulations for the safe operation of cranes. These regulations should be enacted under *The Department of Labour Act*, which should be amended accordingly.

A number of witnesses who appeared before the Commission asserted that it is dangerous for any person to work alone. The Commission does not accept this proposition in its entirety. However, there are undoubtedly situations in which an employee should not be permitted to work by himself. The inspector should have the power to direct that at least two persons be present where it is dangerous for one to work alone.

The attention of the Commission was directed to the problem of the safety of municipal hydro employees. In certain municipalities such employees are not afforded adequate protection by law. The Commission recommends that the excellent safety regulations of The Hydro-Electric Power Commission of Ontario should apply to all operations involving municipal hydro employees.

The Government of Ontario must take the lead in promoting safety as much as possible. The Commission recommends that all government contracts which deal with construction of any description should include an undertaking to comply fully with all applicable safety legislation and with any other requirements pertinent to the safety of the operation. Thus any contractor working for the Province would be obligated to carry on his operations in a safe manner. If any person were not willing to do this at the outset, his tender would not be accepted. If safety requirements were not met in the course of the job the Department of Labour would have at least adequate remedies based on the contract itself.

Inspectors should use their powers under Section 11 of the Act to rigidly enforce safety requirements in connection with machinery, and to stop the operation of machines which are dangerous or from which safety devices or guards have been removed.

Subsection (2) of Section 4 of *The Boilers and Pressure Vessels Act* states that,

> "No person shall be appointed to act as an inspector who has any direct or indirect interest in the manufacture, sale or installation of boilers, pressure vessels or plants."

A similar general section should become part of *The Department of Labour Act*, and should apply to all inspectors making inspections pursuant to all Acts administered by the Department.

Section 12 of this Act provides for a maximum penalty of $500 or imprisonment for no more than 12 months for a breach of the Act or the Regulations. The maximum monetary penalty should be increased to $1,000, or both. The Commission so recommends.

REGULATIONS

MADE UNDER THE DEPARTMENT OF LABOUR ACT RESPECTING THE PROTECTION OF PERSONS WORKING IN COMPRESSED AIR, TUNNELS, OPEN CAISSONS, COFFER DAMS AND CRIB WORK

These Regulations have not been amended since 1926. They were last consolidated in 1944. The Commission believes that all branches of government charged with the administration of any Acts or regulations should review them from time to time to see if any changes are warranted. It is only fair to add that the present Ontario Regulations are similar to the law in force in Pennsylvania, Wisconsin, Illinois and Ohio.

Recently tragic consequences have arisen as a result of inadequate enforcement of these Regulations, violations of the law, and to a lesser degree from the archaic state of the law itself. On March 17, 1960, five men died in a tunnel at Hogg's Hollow, in the Township of North York. The Coroner's Jury stated in part as follows:

> "The death of Pasquale Allegrezza and his fellow workers is the inevitable result of the failure to implement and enforce regulations made under The Department of Labour Act governing the protection of persons working in compressed air.
>
> While it is evident that negligence of these Regulations was responsible for this tragedy, any attempt to attach individual blame in this instance would serve no public good, for the evidence is clear that similar conditions exist in an irresponsible segment of the industry engaged in sub-surface construction. The ignorance of the workers themselves of the legislation designed for their protection, the failure to implement protective regulations by sub-surface contractors and their agents, and the lack of corrective enforcement by inspectors of the Department of Labour have combined to create a condition of hazard to the individual worker. Had these conditions not existed this jury is of the opinion that the fire in the tunnel could have been controlled without fatal consequences.
>
> The heroic efforts of their fellow workers to reach these men were frustrated by lack of rescue training, inadequate knowledge of equipment and facilities, and complete absence of organized direction. According to the evidence presented almost all the safety regulations governing this tunnel project were violated at one time or another, and many of the regulations were violated continuously. The attitude of the management towards the safety of the individual worker can be described as no less than callous.
>
> Many of the workmen both on surface and underground were inexperienced, untrained or unqualified for the work to which they were assigned. Several of the foremen were not sufficiently competent to be entrusted with the instruction or direction of the workmen. It was evident that most foremen were uninformed of the Department of Labour regulations governing safety requirements.
>
> The evidence of the compressor operators as to pressure maintenance, the evidence of the lock tenders as to control of decompression, and the testimony of the foremen, indicates that generally they acted on their own initiative or judgment without instruction from superiors. In the construction industry, particularly on this project, a great number of workers

unable to speak English are employed. This creates a problem of communication, but there is no evidence that pertinent sections of the regulations were posted in proper locations in English, let alone any other language."

The jury went on to state that there should have been a predetermined course of action in the event of an emergency. It also felt that the Department of Labour should have more inspectors.

The Commission heard considerable testimony concerning a tunnel project in the general area of Coxwell Avenue in the eastern part of Metropolitan Toronto. Working in compressed air is quite dangerous, and the employee should only work under pressure for a limited time, depending on the pressure. There is considerable hazard of combustion, and great care must be taken in the process by which an employee undergoes compression and decompression. The employees should be carefully trained. One witness who had worked on the Coxwell Avenue job gave this evidence:

Question: Were any of the safety precautions explained to you before you started to work there?
Answer: No.
Question: Did anyone ever warn you of the danger of working too long under high pressure?
Answer: No danger was explained.
Question: Were you ever told what to do in the event of a fire?
Answer: No, nothing.
Question: Were there any fire extinguishers?
Answer: I couldn't say.

This witness indicated that he had worked under pressure for considerably longer periods than are allowed in the regulations.

This is an excerpt from the testimony of another witness who worked on the Coxwell tunnel project:

Question: Who ran the decompression chamber?
Answer: Ourselves.
Question: Did you ever run it?
Answer: Yes.
Question: Did you ever have any training in how to run it?
Answer: No, but I could understand it on my own because I had seen others.
Question: So you just did it the way some of the other men did it?
Answer: Yes.
Question: Did anyone ever tell you what to do in the event of a fire?
Answer: No.

This witness also worked in the tunnel at Hogg's Hollow:

Question: Were you ever given any safety instructions at Hogg's Hollow?
Answer: No.
Question: Was there any fire drill there?
Answer: No.
Question: Were you ever told the best way to get out if possible in the event of a fire?
Answer: No.

A fire in the Hogg's Hollow tunnel caused the suffocation of those who died there.

The Commission was fortunate enough to hear the testimony of Dr. R. J. Middleton and Dr. E. H. Simmons. Dr. Middleton is Medical Director of the current subway project in Toronto. Dr. Simmons is an orthopedist. Both of them treated many employees who developed the bends or caisson disease as a result of work on the Coxwell tunnel project. These doctors have probably had more experience with caisson disease than any other doctors in Canada.

High air pressure is necessary in the construction of many tunnels, and this high pressure causes the nitrogen present in air to be soluble in liquids; therefore it enters the blood of persons working under pressure. Persons working in compressed air on decompression may be subject to the bends, which are caused by the release of nitrogen bubbles in the blood stream, and which interfere with blood circulation. In recent years it has been learned that many persons who have had the bends have subsequently developed a bone disease due to loss of circulation in those parts of the body, particularly joints, where the larger arteries feed smaller blood vessels. In such parts of the body the blocking of the smaller arteries by nitrogen bubbles results in a loss of circulation and a condition known as "bone death". This bone death may affect only a small portion of the bone. About one-third of persons who suffer from bone death will be seriously incapacitated. While bone disease has only recently been diagnosed, other symptoms of caisson disease are shock, unconsciousness, difficulty in breathing, pain in the joints, paralysis, staggering, blindness, itchiness in the skin, extreme muscular pain, abdominal contraction, and poor circulation in the extremeties.

Medical evidence indicated that many of those who worked on the Coxwell tunnel job during the earlier stages suffered from caisson disease. As a result of a more stringent application of the regulations, and a better understanding of the causes and medical implications, the incidence of this disease was cut drastically later on. A large measure of credit for the improvement is due to Dr. Middleton and Dr. Simmons. On their own initiative they have done considerable research in this field, and the Commission recommends that research be continued.

The recommendations which follow are based on the findings of the jury at the Hogg's Hollow Inquest, the above-mentioned medical evidence, the suggestions of the Department of Labour, and a study of the laws in other jurisdictions.

All foremen in charge of tunnelling operations where compressed air is necessary should be required to instruct all present and future employees about the many hazards which exist. It is essential that each and every employee be made aware of all the necessary safety precautions. If anyone deliberately or carelessly violates one of the safety rules he should be disciplined. If the contractor is in breach of some safety regulations the job should be stopped until the situation is rectified.

Ontario has an impressive record of safety in mining work. The mine safety rules are now Sections 173 to 604 inclusive of *The Mining Act*, R.S.O. 1960, Chapter 241. The Commission recommends that the Department of Labour should incorporate all relevant sections from *The Mining Act* into the compressed air regulations.

The Commission accepts completely the verdict of the jury at the Hogg's Hollow Inquest. The jury felt that the law should include special provisions relating to minimum standards of qualification for lock tenders, compressor operators and others assigned to responsible tasks, combustion under pressure, the wearing of non-flammable clothes by welders, and the prohibition of the use of portable electric cables covered with combustible insulation. This is dealt with in *The Mining Act* referred to above. In addition, the jury urged,

> "That sub-surface rescue training organizations comparable to the mine rescue stations be established under the authority of the Department of Labour, in such metropolitan centres as are deemed advisable following a study of rescue requirements."

If such a group had existed in the Toronto area the men at Hogg's Hollow might have been saved.

> The Commission adopts the view of the jury, "That where a majority of the workers on a project are of a language group other than English, that safety literature, posters, posted instructions and warnings be printed in two languages."

The jury also felt that the Department of Labour should be directed to provide and enforce inspection adequate to ensure the safety of sub-surface employees. The verdict of the jury indicates the need for more inspectors and inspections. Additions to the tunnel inspection staff should be qualified engineers. If necessary, the Department of Labour should employ more inspectors for this type of work. Despite the verdict of the jury at the Hogg's Hollow Inquest, and despite the evidence adduced before this Commission, some members of the Department of Labour took the position that the Hogg's Hollow tunnelling project was a "safe" job. The Commission is unable to agree with this. In our view, as in the view of the Coroner's Jury, the job was anything but safe.

Regulation 10 now provides for the maximum number of hours for each shift and for rest intervals between shifts. The length of the shifts and of the rest intervals depend upon the air pressure in the tunnel. The Commission recommends the adoption of Section 430 of the labour code of New York State. Both Doctors Middleton and Simmons approved this code, to which should be added a category for pressures up to 15 pounds. A copy of Section 430 of the State of New York labour code is annexed hereto as Appendix "I". The times shown in the table, which is a part of the section, should commence when an employee leaves the compression chamber and end when he enters the decompression chamber.

After an employee has worked his shift in a tunnel where there is compressed air, he must undergo the process of decompression. If this is not done, or if it is done too quickly, the employee may develop the bends or caisson disease. Regulation 13 governs the rate of decompression. Regulation 13, Subsection (3) now says,

> "Where the pressure is greater than normal and less than fifteen pounds, decompression shall be at the minimum rate of three pounds per minute."

The word "minimum" should be changed to "maximum". The maximum rate of decompression should be two pounds per minute instead of three pounds per minute. In Subsection (4) the maximum rate should be one pound per minute; in Subsection (5) the maximum rate should be one and one-half pounds

per two minutes; in Subsection (6) the maximum rate should be one-half pound per minute. Regulation 13 should be set out in the form of a table. The experts disagreed as to whether decompression should be conducted by stages or single-stage continuous decompression. Therefore, the Commission makes no recommendation in this connection. This problem merits further investigation. It is to be noted that in some jurisdictions the rate of compression is also regulated.

Often a man does not realize that he is suffering from caisson disease until several hours after he has left work. The proper treatment for such an individual is to place him in a decompression chamber. The Commission recommends that a central decompression chamber should be set up in a hospital in Toronto, and elsewhere as circumstances may require. Any person suffering from caisson disease could be rushed there for treatment.

The present Regulations require the submission of plans and specifications, but there is no requirement that the Department be notified of changes in design during the construction period. In the Hogg's Hollow project a bulkhead was placed in the tunnel between the Wilson Avenue and Yonge Street exits, thus blocking the escape of the five men who perished. The bulkhead was not part of the original plan submitted, and inspection was not sufficiently thorough to determine its existence. The Regulations, therefore, should be amended in this respect.

In a document dated November 25, 1960, the Department of Labour made some excellent suggestions. First-aid supply should conform with regulations under *The Workmen's Compensation Act.* A wire basket stretcher or equivalent device should be provided in a convenient and readily accessible place at the surface level.

The Department also suggested that no person shall construct underground a dam or bulkhead for the purpose of impounding water or confining air under pressure without first obtaining permission in writing from an inspector of the Department of Labour. Had this been the law the trapped men at Hogg's Hollow would have been able to get away. The Department also made comprehensive recommendations concerning fire prevention and fire protection. The Commission accepts these. To these suggestions, copies of which form Appendix "J" to this Report, the Commission wishes to add that there should be an emergency signal or alarm on the surface for all emergencies. In addition, there should be a telephone connecting the tunnel operations with the surface. These suggestions of the Department of Labour refer to "summoning the municipal fire department". It is most important that local firemen and policemen should be advised in tunnel rescue work if a large scale tunnelling project is to be carried on in their locality.

In a memorandum dated November 23, 1960, Mr. Ronald Turton, Chief Inspector, Factory Inspection Branch, Department of Labour, made a number of proposals to the Director of Technical Services of that Department. A copy of this memorandum is attached hereto as Appendix "K". The Commission agrees with the suggestions made therein. Some of them have been dealt with above. They should become part of the regulations.

Regulation 25 provides that no person shall be permitted to work in compressed air without a previous medical examination. This regulation should also state that the doctor in charge must give instructions to every man before he commences work on the project. The Department of Labour should see to it that any doctor in charge of a project is assisted in every way possible with

the results of previous research into caisson disease. Because of the difficulty of diagnosis and the importance of prompt treatment, every person working in compressed air should be required to wear an identification disc or distinctive medallion. Police and fire departments throughout the Province should be provided with pictures of these discs and medallions so that they may assist in rushing a man to the nearest decompression chamber if he is stricken with the bends. The evidence indicates that symptoms of caisson disease may resemble those of intoxication.

The regulations should provide for the use of various types of protective clothing. In particular, welders should be required to wear fire-resistant clothing.

At the Coxwell tunnel job, during one of the early months, 25 per cent of the employees developed the bends, a symptom of caisson disease. At the current subway project in Toronto the recommendations above in connection with rates of decompression and lengths of shifts are now in force. After the first 20,000 decompressions there had only been five cases of the bends. This startling contrast clearly indicates the need for amendments to the existing compressed air regulations.

The first part of these Regulations dealt with the problem of the safety of employees working in tunnels where it is necessary to use compressed air to keep water out of the tunnel. The second part is concerned with open caissons, coffer dams and crib work. Mr. W. J. Munro, Caisson Inspector, Ontario Department of Labour, testified that in the past 24 years 14 men have lost their lives working on open caissons. He stated that most of these men drowned after falling off the caisson into the water. The Commission recommends that the Regulations be amended to provide for the use of life jackets and safety belts, and that a boat should always be at hand where work is done in and over deep water. Otherwise, the caisson regulations seem quite satisfactory.

In addition, consideration should be given to including in the Regulations provisions for the removal of debris and rubbish from sub-surface operations, and an auxiliary compressor to prevent accidental decompression resulting from compressor failure.

THE ELEVATORS AND LIFTS ACT

This Act is designed for the protection of all those persons who use elevators, escalators, ski tows and manlifts. It is obvious that the safety of hundreds of thousands of citizens of Ontario depends upon the adequacy of the Act and its proper enforcement.

The Commission believes that there are too many accidents in the area covered by this Act. This is particularly true of accidents taking place on escalators. A table of causes of escalator accidents in Ontario for the fiscal year 1957-58 is attached hereto as Appendix "L". In the fiscal year 1959-60, 323 persons were injured in or on conveyances governed by the Act. It is to be noted that 289 of these injuries took place on escalators. In the fiscal year 1958-59, the comparable figures were 297 out of 323; in the fiscal year 1957-58, 298 out of 333, and in the fiscal year 1956-57, 269 out of 294. A high percentage of all escalator accidents in the Province occur on subway escalators. In 1957-58, two-thirds of all escalator accidents occurred on Toronto subway escalators. In view of that fact, the Department of Labour should investigate the situation thoroughly. The best safety measures which could be taken to reduce the number of subway escalator accidents are education of the public and improved design of escalator handrails. These handrails should be of such a size and shape that they could easily be gripped by women and children. The maximum speed of escalators should be regulated by the chief inspector. It is to be noted that rowdyism, spike heels, seated riders, and feebleness, contribute to these accidents.

In 1959-60, there were two accidents in which elevator cars fell to the bottom of their respective shafts. In each case, the ropes or cables holding the cars broke. The arresting devices which must be attached to all elevator cars did not function. At present the practice is to subject the safety devices to a running test by the contractor at the time of installation, and thereafter the safety devices are not subjected to a running test unless the inspector feels that they may be defective or inadequate. The Chief Elevator Inspector of the Department of Labour, Mr. F. W. Ehmke, stated that such tests would damage the elevators. However, Mr. W. G. Ferrier, Chief Engineer, Otis Elevator Company, stated that all safety devices on elevators should be tested periodically.

> "The safety devices should be kept in condition which would allow them to stop the car and make a complete stop, and if it is going to damage the equipment, well then, the equipment should be rectified so that it won't damage the equipment."

The Commission urges that all arresting devices on elevators should be tested regularly in accordance with the Safety Code for Elevators, Dumbwaiters and Escalators, of the Canadian Standards Association, B44, 1960, which provides for annual inspection and testing, including the running test. In the view of the Commission, all such tests should be made in the presence of an inspector.

The aforementioned two accidents came about because insurance company inspectors were negligent in their inspection of the cables and ropes. The only action taken by the Department of Labour as a result of these accidents was to request the insurance companies to reprimand the inspectors involved. This is not enough. Mr. Ferrier stated that an inspector who is so negligent that he fails to notice the corrosion of elevator cables should be prohibited from doing further work for the Department of Labour. The Commission endorses this view.

There is no objection to the inspection of elevators by properly qualified employees of insurers since it is obviously in the best interest of the insurer to see that a proper inspection is carried out. It is felt, however, that the Department of Labour should have more control over insurance inspectors. Therefore, these insurance inspectors should be made inspectors within the meaning of the Act, and be subject to disqualification for cause. Furthermore, the Department of Labour must set out all the features of each installation which are to be inspected. In other words, the Department must have a formula for all elevator and escalator inspections.

According to Section 7 of the Act, an insurer must send a copy of an insurance inspection report to the Department of Labour within 30 days after the inspection has been made. The Commission believes that such a report should be sent to the Department within 21 days. If an elevator accident caused by failure of the equipment occurs, the insurance company inspector who had last previously inspected the elevator should not be allowed to inspect any more elevators until the cause of the accident is determined. As has been stated above, if the accident is a result of his negligence, his certificate of competency should be withdrawn and he should not be allowed to make inspections again. The Commission recommends that the chief inspector should from time to time inspect installations shortly after they have been inspected, whether by departmental or insurance inspectors. In this way negligent or incompetent inspections will be more readily detected.

Section 8 of the Act states:

> "In carrying out their duties the inspectors shall, subject to this Act and the regulations,
>
> (a) apply the Safety Code for Passenger and Freight Elevators of the Canadian Standards Association, 1938 Edition, as re-affirmed and approved by the Association in 1951, to new installations of elevators, dumb-waiters and escalators;
>
> (b) apply such parts of such Safety Code to major alterations of elevators, dumb-waiters or escalators as the regulations require; and
>
> (c) apply such parts of such Safety Code to new installations or major alterations of incline lifts as the regulations require."

In June of 1960 The Canadian Standards Association published its 1960 Safety Code for Elevators, Dumbwaiters and Escalators (Second Edition). This Code, which runs to 250 pages, is excellent. It is the result of the work of a committee of experts of industry, government and labour. Its adoption has been suggested in the brief of The Canadian Electrical Manufacturers' Association. The Commission believes that Section 8 should be amended so as to adopt the 1960 Code. The new Code covers automatic elevators which are not referred to in the 1938 Code. Ninety-five per cent of new elevators are of the automatic type. The Commission has been informed that Alberta has adopted the new Code already and that Saskatchewan and New Brunswick probably will do so shortly. In the view of the Commission a new subsection should be added to Section 8. Under this new subsection, the 1960 C.S.A. Code would govern all new installations. The Commission suggests that this new subsection should come into force on January 1, 1963.

Section 9 of the Act is as follows:

> "For the purpose of an inspection or an investigation under this Act, an inspector may, by notice in writing, require the attendance before him of any person at the time and place named in the notice and may then and there examine such person under oath regarding any matter pertaining to such inspection or investigation."

This section gives far too much power to an ordinary inspector, and is particularly true in the case of an insurance company inspector. Only the chief inspector should be allowed to exercise the broad powers set out in this section, and therefore the section should be amended accordingly.

Under Section 24 the maximum penalty for a contravention of any of the provisions of the Act is $500. Since certain infringements of the Act could be extremely serious, the maximum penalty should be altered to $1,000.

Mr. F. W. Ehmke, the Chief Elevator Inspector, testified that 99 per cent of all elevator accidents, which occurred in the cars themselves, involved cars which had no gates. It follows that if gates had to be installed in all elevators cars, the number of accidents would drop substantially. Mr. Ehmke did not think it would be feasible to install gates on all elevators. Once again, Mr. Ferrier disagreed with the Department of Labour. He believes that gates should be installed on all elevators. He points out that the 1960 Code, referred to above, provides for this. The Commission agrees with Mr. Ferrier, and recommends the immediate amendment of the Act and regulations.

Elsewhere, the Commission has suggested the need for an *Ontario Safety Council*. In connection with this Act, the Council could study, for example, the speed of elevators, the use of circuit-breakers, and the size and shape of handrails of escalators. The Council could carry out research into technical problems involved in the construction and maintenance of elevators and escalators, with a view to the protection of the public and employees.

THE FACTORY, SHOP AND OFFICE BUILDING ACT

This Act is a mixture of legislation dealing with divergent subjects. The Act devotes a number of sections to bakeshops. Part of it deals with municipal by-laws as to closing of shops. Still another part sets out the law in connection with the health of workers. This diversity of subjects makes the Act difficult to enforce. Therefore, it is recommended that certain sections of the Act should become separate Acts or parts of other Acts.

Part II of the Act is entitled "Municipal By-laws as to Closing of Shops". One section in this part even deals with gasoline service stations. This part of the Factory Act should become part of *The Municipal Act.*

Sections 63, 64 and 65 cover bakeshops. Section 64 is as follows:

> "No person shall sell, expose or offer for sale bread or buns manufactured out of Ontario without the written permission of an inspector."

Section 63 refers to the construction, lighting, heating, ventilation and drainage of bakeshops, washrooms, toilets, and bakeshops below ground level. It also states that sleeping places of bakeshop employees shall be separate from the bakeshop. Finally, Section 65 covers hours of labour in bakeshops, hours of work on Sunday, and hours of rest. These sections should be removed from the Factory Act and should form a part of a separate Act in which certain other sections of *The Factory, Shop and Office Building Act* might be incorporated. This new Act should be administered by the Department of Health.

Sections 26 to 38 deal with hours and conditions of work for young people and women. Historically, these sections are derived from the original English Factory Acts which were enacted in the last century to curb the abuses which arose in England at the time of the industrial revolution. The Commission recommends that these sections be combined with *The Hours of Work and Vacations with Pay Act.* These changes will make *The Factory, Shop and Office Building Act* more cohesive and also solve the problem of overlapping jurisdictions.

The work of the Department of Labour in the field of factory inspection has been commendable. During the year ending March 31, 1960, the Department made more than 54,000 factory inspections. The number of inspections per year in this field almost doubled in 10 years. In a five-year period ending in March, 1960, there were 135 prosecutions for violations of the Act. The Commission heard a number of complaints concerning conditions in certain factories and the action taken by inspectors of the Department of Labour. These complaints were unjustified, and were not supported by the evidence. The Commission realizes that it is difficult for the Department to keep up with the fast rate of industrial growth in the Province. More inspectors will undoubtedly be needed from time to time. Each factory should be inspected at least once per year.

The work of the Factory Inspection Branch has effectively reduced unsafe structural conditions in plant and factory. The approval of an engineer of the Department is required before the plans for construction or alteration of any factory, large shop or large office building can be implemented. In this process safety factors are checked from every conceivable viewpoint.

The Canadian Institute of Timber Construction and the Ontario Recreation Association both presented briefs to the Commission. These organizations

are concerned with the problem of structural soundness of public buildings generally and arenas in particular. Their anxiety appears to be justified. On February 28, 1959, the roof and walls of the rink section of the Listowel arena collapsed. Seven young boys who were playing hockey, and one adult, were killed. Thirteen other boys were injured. In January, 1959, the roof of a curling rink at Lake of Bays collapsed, and three persons died. In February, 1956, two-thirds of the roof area of the arena at Englehart fell. This occurred one hour before 200 school children were to enter the building for a civic function. At Lake of Bays and at Englehart no engineering analyses of the structures had been made. At Listowel the timber roof trusses were not built in accordance with the plans. They were improperly manufactured; they had not been inspected. While this problem does not come within the terms of reference of the Commission, except in so far as the safety of employees is concerned, the Commission recommends that some action should be taken. The scope of Section 13 of the Act should be widened to include arenas, auditoria, stadia, theatres, race tracks and public buildings. In this way, the plans for these types of buildings would be subjected to careful scrutiny. In addition, all existing buildings falling into the above categories should be inspected from time to time to ensure that they are structurally sound. The public at large is entitled to the same protection now enjoyed by factory employees.

The Ontario Federation of Labour and the United Steelworkers of America pointed out that in 1955 the Department of Labour prepared draft regulations for use in foundries. These regulations have never been promulgated, due principally to certain objections relating to ventilation and sanitation raised by industry. In the meantime, the Department of Labour inspectors are said to be applying certain of the draft foundry regulations without any defined authority to do so. This is an unsatisfactory condition, and the draft regulations should be set out in a practicable form, and implemented.

Various penalties for offences are provided in Sections 11, 13, 14, 15, 19, 24, 29, 38, 39, 41, 43, 44, 59, 60, 61, 62, 66 to 69 inclusive, and 76. There should be one section providing a general penalty for an offence contrary to the Act or regulations instead of these separate penalties. The maximum penalty should be $1,000 and there should be no minimum penalty. This should simplify enforcement of the Act.

In its second brief, the Department of Labour suggested that the Act might be amended to mention the need for provisions for the removal of explosive dusts, gases and volatile liquids from industrial plants. The obvious threat to the safety and health of workmen posed by these toxic and potential explosives points up the need for the control of these conditions, and the Commission accordingly recommends that the Regulations under the Act be expanded to cover such exhaustion and venting.

Section 55 provides for the separate storage of coal oil, petroleum, benzine, naphtha, gasoline, or any explosive or combustible or flammable material. This section should be amended so that it would specifically refer to the proper *handling* of explosives.

The Commission heard evidence in connection with the question of dangerous fumes and noxious gases. There are undoubtedly operations which would necessitate the use of gas masks by certain of the employees involved. The regulations should provide for such situations.

Under the Act, "youth" means a male of the age of 14 years and under the age of 16 years. "Young girl" means a girl of the age of 14 years and under the age of 18 years. Clause (a) of Section 30 provides that subject to Sections 31, 32 and 33, in a factory, shop, bakeshop or restaurant, no youth, young girl or woman shall be employed for more than ten hours in one day, nor shall any such person be so employed for more than 60 hours in any one week. Section 31 states that if an accident that prevents the working of a factory happens to the motive power thereof, or if the customs or exigencies of trade require longer shifts, an inspector may give permission in writing for an exemption from Section 30, and may permit longer shifts. This section goes on to state that in the event of such exemption, no youth, young girl or woman shall be required to work more than 12½ hours in any one day nor more than 72½ hours in any one week. In this respect, the law has not changed since at least 1914. Sections 30 and 31 should be amended so that no youth, young girl or woman shall be employed for more than nine hours in any one day or 54 hours in any one week, for limited periods.

Subsection (1) (c) of Section 43 deals with temperatures in factories and shops, and states that the temperature should not be less than 68 degrees Fahrenheit unless authorized by an inspector. This subsection should also regulate working conditions in maximum temperatures. The Department of Labour should seek medical advice to determine such permissible temperatures.

The Commission recommends that the Act should be amended so as to specifically state that no female person should be required to lift any weight in excess of the maximum to be determined in accordance with medical advice.

The Department of Labour should have regulations enacted in connection with the attendance of doctors and nurses at factories and shops. Naturally, in drafting such regulations, consideration should be given to such factors as the size of the plant, the hazards involved, the availability of medical assistance, and the number of persons working in the plant.

A number of witnesses who testified before the Commission gave it as their opinion that no person should be allowed to work alone in any industrial operation. Undoubtedly there are many jobs where it would be dangerous for a man to work by himself. However, this is not true of all jobs. The variety of working conditions makes it difficult to formulate a regulation of general application to cover this problem. The Commission recommends that this matter be studied by the Department of Labour, and that in the meantime the inspectors exercise their authority under Section 11 of *The Department of Labour Act* to prevent persons from working alone under conditions making it unsafe to do so.

Inspection of the thousands of restaurants and bakeshops that presently come under the Act could better be left to the municipalities or to the Department of Health.

REGULATIONS

MADE UNDER THE FACTORY, SHOP AND OFFICE BUILDING ACT RESPECTING GRAIN ELEVATORS

The primary reason for the existence of these regulations is that an excessive accumulation of fine particles of dust in suspension from the grain in elevators can cause violent explosions. On August 7, 1945, during a week in which historic explosions of a different nature occurred, the Saskatchewan Pool Terminal Limited Elevator Number 5 at Port Arthur was shattered by a blast which ripped apart reinforced concrete walls 18 inches thick. Twenty-two persons died, and 27 others were injured. The property damage was three-quarters of a million dollars. In 1952, 1956 and 1957 other grain-dust explosions rocked elevators at the lakehead. The first elevator at the lakehead was built in 1882. All the earlier elevators were constructed of wood, and the men were allowed to smoke inside the elevators. For some reasons there were no grain-dust explosions until 1945. In 1953 the Grain Elevator Dust Problem Committee was established. It included representatives from the National Research Council, the Ontario Department of Labour, engineers, underwriters, the Board of Grain Commissioners and representatives of labour and management. The work of the Grain Elevator Dust Problem Committee resulted in the 1957 amendments to these regulations.

The Commission received a 375-page brief from the Brotherhood of Railway Clerks, Lodge 650, Elevator Division, Port Arthur and Fort William, and a reply from the Lakehead Terminal Elevators Association. So that the proposals could be thoroughly examined, the Commission conducted hearings in Port Arthur. The members of the Commission toured grain elevators in that city. Mr. A. R. Morse, an electrical engineer employed by the National Research Council, was invited to testify before the Commission in Toronto. He has spent the past 10 years on research into the causes of various types of industrial explosions. Research into the causes of grain-dust explosions has occupied a considerable portion of his time. Dust explosions result from a combination of a heavy accumulation of fine suspended dust, critical atmospheric conditions, and a source of ignition. Fine dust may result from the handling of grain or screenings.

The Commission will deal individually with each of the recommendations made by the union. Firstly, "The Local Chairman of Lodge Number 650 shall accompany the government inspector on his tours of inspection and shall be allowed to submit his own report to the Chief Inspector." The Commission recommends that an inspector, when making an inspection, should contact a representative of the employees to hear their complaints, if any, and that, if the inspector so desires, a representative of labour and management should be allowed to accompany him on his tour of inspection. Generally speaking, if such a request is made, an inspector of the Department of Labour should agree to it. However, there may be circumstances respecting which an inspector would be justified in conducting his inspection alone. This recommendation of the Commission should apply to all the Acts and regulations referred to in this Report.

The union suggested that a qualified tinsmith should be employed at each elevator. It stated that his only duties would be to maintain the dust collection systems. The evidence indicates that in its own self-interest management is anxious to maintain dust collection systems in good repair, and that the full-time services of a tinsmith are not required in all cases.

The union's next proposal was that, "Five men shall be employed as sweepers continuously and solely in each elevator whose capacity is five million bushels or less and one man for each additional million bushels or any portion thereof." Subsection (2) of Regulation 79 states, "As many sweepers shall be so employed as are necessary to keep the building clean." It is of vital importance that the grain elevators should be kept clean at all times, otherwise dust may accumulate, creating a hazardous condition. The inspectors of the Department of Labour should be sure that the elevators are clean, and that the staff of sweepers is adequate in each case. The Commission feels that Subsection 2, Regulation 79, is sufficient, if enforced, and that it is impracticable to specify the number of sweepers required in different elevators.

The next recommendation advanced by the union was this: "Outside storage for refuse screenings must be erected no later than the opening of the 1961 navigation season." In reply, the Lakehead Terminal Elevators Association said in part, "It is considered that the most dangerous element in an elevator is fine dust, not refuse screenings." A witness for one company estimated that it would cost $244,000 to construct a special building to store and handle refuse screenings in association with the existing plant of that company. This figure did not include the possible cost of additional real property and the construction of a railway spur.

"Refuse screenings" is a term used for the by-product produced from the cleaning of all grains. Included in refuse screenings are beards from the ends of some forms of grain, bran sheaths, straw and some poor grain. Mr. Morse said, "I feel that refuse screenings have a greater potential for hazard than grain." He stated that it is more difficult to remove the potentially explosive dust from refuse screenings than from grain kernels because the screenings do not release this dust as easily as the grain under cleaning processes. He pointed out that screenings are made up of a less solid material than grain kernels and therefore are more easily broken up to create fine dust.

At the request of this Commission, Mr. Morse wrote to Dr. J. M. Roxburgh, of the National Research Council, Prairie Regional Laboratory in Saskatoon. Dr. Roxburgh is a recognized expert in the field of investigation into the causes of grain-dust explosions. He replied to Mr. Morse in part as follows:

> "I think that the answer that the Commission should receive is that neither screenings nor grain are themselves explosive, but are merely sources of hazardous dust. The point is, I think, that the screenings are a source of a far greater quantity of potentially hazardous dust than any other elevator product, and only half of this can be excluded by keeping the dust collector discharge out of the elevator and workhouse." Dr. Roxburgh continued, "I do not believe that handling screenings creates more dust than handling grain. The dust is already there and almost impossible to remove. Certainly its removal is not economic with any method yet investigated. If my opinion were required, I would state that the only safe answer, and the one I would recommend as an eventual objective, is to handle all screenings in a separate facility geared to its highly dusty character, and to exclude screenings entirely from the regular grain handling equipment designed for relatively clean grain. In other words, dusty materials *can* be handled safely but not in conventional elevator equipment. I am not aware of any other proposal that has any possibility of being effective."

Mr. Morse was questioned on Dr. Roxburgh's statement.

> "I do not believe that handling screenings creates more dust than handling grain," Mr. Morse commented. "I do believe this. We differ on this point. I think it is more than a difference of opinion. Dr. Roxburgh feels that screenings don't create more dust than grain, that is, not in the actual handling. I myself feel that because of the nature of grain and the nature of screenings that there is more dust created. But this is not the important thing; the important thing is the dust is there and can't separate it—[it cannot be separated]."

Mr. Morse pointed out that there is 100 times more fine dust in refuse screenings than in grain kernels. He stated that Dr. Roxburgh believed the ratio to be ten to one. Mr. Morse was asked whether any grain elevator explosions had been caused by fine dust emanating from refuse screenings alone. He testified:

> "This seems to be probably indicated. Beyond that we can't say. It is so very difficult to find out where the explosion starts and why."

Mr. Morse did not know whether it would be better to place refuse screenings in separate bins in existing elevators, or to place them in entirely different structures. He could not recall whether he had ever recommended placing refuse screenings in separate buildings.

Dust arises from the handling of grain and screenings, and the amount of handling is thus related to the volume in storage.

The Commission therefore recommends that the Department of Labour establish a reasonable maximum for the amount of refuse screenings which may be stored in a grain elevator or any bin therein at any one time. The maximum should be reached after consultation with management and labour, and should depend upon the size of the elevator involved. Mr. R. A. Hubber-Richard, Chairman, Lakehead Terminal Elevators Association, was asked this question, "Would you have any objection if the regulations were modified to explicitly define the maximum amount of screenings that might be accumulated at any one time, providing, of course, that it was some reasonable figure?" His answer was, "If it was a reasonable figure I think the industry would look upon it favourably." The Commission recommends that research into the problem of the handling and storage of refuse screenings should continue, together with general research in the field of dust control.

The union suggested that screening bins should be thoroughly cleaned after the grain has been removed from them. The merits of this recommendation are obvious, and the evidence indicates that generally these bins are cleaned.

The next suggestion of the union was that grease and oil necessary for use in the elevator should be enclosed in brick, cinder or cement blocks instead of wood. The evidence adduced before the Commission on this subject was inconclusive. In the opinion of the Commission, this matter is a suitable subject for collective bargaining.

The union argued that all machinery should be kept in proper working order. They suggested that rubber wheels should be used on mayo spouts (a large internal master spout mounted on wheels). The Commission heard no evidence to indicate that machinery in elevators is not kept in proper working

order. The Commission approves of the suggestion that rubber wheels should be placed on mayo spouts. It may be that rubber wheels will reduce the hazard of sparks.

The suggestions that catwalks be placed under all shipping spouts, that low-hanging obstructions be removed, and that guardrails and wire mesh be installed around conveyor belts, point up the difficulty in drafting regulations to deal with situations which vary from place to place. The Commission recommends that these matters be left to the discretion of the inspector dealing with each particular situation, and that the regulations be amended to authorize him to issue directives accordingly.

The union contended that rubber buckets must be used in the shipping legs when screenings are being handled. A shipping leg is a long duct running from the bottom of the elevator to the top. Grain is conveyed upwards in it at high speeds. The grain is carried in many small metal buckets attached to a conveyor belt inside the shipping leg. The union pointed out that if the metal buckets struck any other metal object, a spark might result. Such a spark could set off an explosion in the elevator. The evidence indicates that rubber is safer than metal from the point of view of mechanical ignition, and no more dangerous than metal as a source of electrostatic ignition. However, rubber is inflammable, and poses a hazard in travelling at high speeds. In view of the inconclusiveness of the evidence, the Commission makes no recommendation except that this aspect of the problem be further studied with a view to finding a suitable substitute.

As to the addition of nitrogen to reduce oxygen, it appears that this is impracticable except in enclosed areas, and is harmful to men working in the area because of loss of oxygen.

The union suggested that fire drills should be held twice a year and that all employees must be properly drilled in the use of fire-fighting equipment. The Commission agrees. Proper fire drills are most important. The Commission also recommends that adequate fire alarms should be installed in all elevators.

The union objected to ladder-type fire escapes. At the present time most elevators have a stair-type fire escape at their upper extremities. These fire escapes lead to a ledge located below the roof of the elevator. From that point down, the fire escapes consist of enclosed vertical ladders. Management argued that this is a suitable arrangement. They suggested that if a man were injured so severely as to be unable to climb down a ladder, he could rest on the ledge until rescued. The Commission observed that these ledges are high above the ground. Anyone forced to remain on such a ledge might well lose his life from falling, fire or subsequent explosions. It is probable that such a person would require immediate medical attention. Therefore, the Commission recommends that the stair-type fire escape should be installed on the outside of all elevators. These fire escapes should provide easy access to the ground.

The union argued that conveyor belts should be stopped when men are cleaning out bins under the belts. Union witnesses stated that the reason for this suggestion is that objects might fall from the belt and strike a man working in a bin below. The Commission is satisfied that the bins are not located directly under the belts. However, the Commission recommends that a heavy wire screen be placed around and over the opening at the top of the bin when men are working below in the bin. This would protect such men from falling objects.

Regulation 81 provides for the design, installation and operation of a proper dust control system. At present, such systems have only been installed in a few elevators. Proper dust control is essential for the prevention of grain-dust explosions. Mr. Hubber-Richard, aforementioned, stated that his elevator had installed a dust removal system, and that, while such installations are costly, he expressed the opinion that, subject to the problems of construction, such controls could probably be installed in all elevators within a year. The Commission therefore recommends that adequate dust control equipment be installed in all elevators by December 31, 1962. These dust control systems should comply with Regulation 81.

Regulation 38, Subsection (1), states that Regulations 39 to 46; Subsections (1) and (2) of Regulation 48; Regulations 52 and 53; Subsections (1) and (2) of Regulation 54, and Regulations 56 and 61, do not apply to an elevator erected before July 8, 1946. Regulations 39 to 46, and Subsections (1) and (2) of Regulation 48, apply to structural requirements. It is understandable that such regulations could not properly apply to elevators built years ago. Regulations 52 and 53; Subsections (1) and (2) of Regulation 54; 56 and 61, however, deal with motors, backstops for elevator legs, individual electric motor drives, the clearance of machines above the floor, and the clearance of rollers supporting conveyor belts above the floor. The Commission recommends that these regulations should apply to all elevators, regardless of the date of construction, and that Subsection (1) of Regulation 38 be amended accordingly. Whenever new equipment is purchased to replace items now exempted from the latter group of regulations, the new equipment should conform with those regulations.

Subsection (2) of Regulation 38 states that Regulations 49, Subsection (3); 54, Subsection (4); 79 and 83; 84, Subsection (2); 85, Subsection (4); 86 to 94 and 96 to 98, do not apply to an owner who is not an employer. These regulations deal with windows being open to provide ventilation, the running of elevator machinery, sweeping, bin lights, lights used by watchmen, radiators and steam pipes being free from combustible material, locomotives, insect control, smoking, open flames, oils, static electricity, fire protection, and watchmen. The Commission recommends that Subsection (2) of Regulation 38 be amended so that the regulations listed would apply to the operator, whether owner or not, of the elevator. The person in charge of the elevator should be held responsible for infractions of these regulations.

Under Section 69 of *The Factory, Shop and Office Building Act*, the maximum penalty for breach of these regulations is $50. This sum is inadequate. It should be increased to $1,000. There should be no minimum penalty.

Because of the great danger of explosions, it is vital to the safety of the men working in grain elevators that the regulations should be rigorously enforced. Therefore, inspection should be made more frequently. The Commission recommends that each elevator in the Province be inspected at least once every three months by an inspector of the Department of Labour.

The Commission was impressed by the efforts of both labour and management to promote safety. The Brotherhood of Railway Clerks prepared an exhaustive and useful brief for the Commission. Included in it were several excellent suggestions. In the years 1945 to 1960 the terminal elevator companies at the lakehead expended $6,900,000 on modifications of elevators which were prompted by considerations of safety. Working together, management, labour and government representatives have already accomplished a great deal

with their Dust Problem Committee. The Commission is confident that many safety problems which may arise in the future can be dealt with through collective bargaining.

The Commission emphasizes the need for continued research into the causes of grain elevator explosions, improved methods of dust collection and the enclosed handling and separate storage of screenings. It is important that the Dust Problem Committee continue to function and utilize the services of the National Research Council in its efforts to find a practical and economic solution to the problem of dust control.

THE OPERATING ENGINEERS ACT

This Act is concerned primarily with the safety of persons with respect to the operation of steam boilers, compressors, refrigerators, air conditioning units, and hoisting plants. For this purpose the Act specifies that certificated operating engineers of various grades be continuously on duty for the operation of plants of specified minimum horse-power ratings.

The position taken by industry is that automatic and semi-automatic systems equipped with automatic safety controls do not require the degree of operating supervision required for manual systems. Basically, the industry wishes an increase in the minimum horse-power rating for which an operator is required, the use of lower grades of certification for specific horse-power ratings, the right to require operating engineers to perform other duties in the vicinity of the registered plant, and the right to eliminate the use of operating engineers in specified plants. The point is made that in automatic and semi-automatic systems maintenance is more important than operating supervision.

The operating engineers are opposed to any change in the minimum specified horse-power ratings for which an operator is required, claiming that there is no completely foolproof automatic control system. This claim is supported by the Chairman of the Board of Examiners appointed by the Department of Labour under the Act. Resistance to the changes in the Act proposed by industry is unquestionably motivated both for reasons of security of employment and maintenance of the semi-professional status secured under the Act. The motivation of industry, on the other hand, is primarily founded on costs and the economic consideration based on competition in jurisdictions having no similar requirements. The Act itself is an archaic piece of legislation dating from 1907, and subsequent amendments have been largely for the purpose of clarification rather than modernization, and it has failed to keep pace with advancing technology.

Technological developments leading to automation and semi-automation in recent years have unquestionably reduced the need for the operating supervision required by manual systems. The evidence indicates that in extreme cases, such as the hermetically sealed refrigeration plant, and the complete operation of units from a central control room, there is virtually nothing for the operating engineer to operate. New alloys and designs together with the development of numerous automatic controls have resulted in the manufacture of equipment that is inherently much more safe than formerly and, clearly, less operating supervision is required.

It is the opinion of the Commission that *The Operating Engineers Act* was not enacted to protect manufacturers of boilers and refrigeration equipment; likewise, it was not enacted to perpetuate the employment of persons in positions where little work is required; rather it was enacted for the protection of the public. Scientific progress in all fields is inevitable in an era when man is literally reaching for the stars.

Various briefs submitted to the Commission supported or opposed any change in relation to the horse-power capacity of the plant, and failed to make a distinction on the most important basis, namely, manually operated equipment as opposed to modern automated equipment provided with automatic safety devices and controls. In view of these considerations, it appears that there is an area within which certain equipment covered by the Act may be operated safely with less supervision than is presently required by the Act.

The Commission has heard no evidence of an industry-wide effort by management and labour to solve this problem in a co-operative manner having regard to technological advances and economic and social considerations.

As a result of the conflict of evidence and the need for further detailed study, it is accordingly recommended that any alteration of minimum horse-power limits requiring a specified grade of operating engineer, the exemption of any equipment from the terms of the Act, and the minimum specifications and requirements for automatic safety devices, be determined by a *Board of Review*. This recommendation is made because the Commission is not technically equipped to deal adequately with the problem. Revision of the Act based on the recommendations of such a Board should be implemented having in mind the minimum dislocation of employees, and, in any event, a gradual or transitional effect on the employment of operating engineers. It is to be noted that many briefs submitted to the Commission stressed that the skill of the operating engineer could be used to advantage in the broader field of plant maintenance and inspection. As to the constitution of the proposed *Board of Review*, we recommend the appointment thereto of representatives of industry, organized labour, and a mechanical and electrical engineer drawn from the faculties of engineering of Ontario universities, with an independent chairman to be selected by the members of the Board. Amendments to the Act should be sufficiently explicit that design and installation can be executed to conform with the requirements of the Act.

Representations of the operating engineers on the administration and enforcement of the Act have been considered, but it should be borne in mind that only a realistic Act is capable of enforcement. Therefore, following modifications to the Act resulting from the recommendations of the Board, it is further recommended that the responsibility for enforcement be lodged with a chief inspector independent of the Board of Examiners, and responsible to the Director of Technical Services.

The Operating Engineers Handbook now provides an outline of a curriculum and list of recommended text-books for those who wish to take examinations for qualification under the Act. In addition to the curriculum, it should include a systematic course of studies for such students. We recommend that steps be taken to provide a course of study to meet present needs and to anticipate future needs in those fields of engineering being opened up by technological advancement.

Section 30 provides that the maximum penalty for an offence contrary to the Act shall be not more than $100. It is the opinion of the Commission that the maximum fine should be increased to $1,000. There should be no minimum penalty.

THE TRENCH EXCAVATORS PROTECTION ACT

Generally speaking, this is an excellent piece of legislation which is properly administered by the Department of Labour.

The Act was proclaimed in 1955. Basically, it is designed to protect employees who must work inside relatively deep trenches. The sides of a trench must be properly shored or tons of earth may cave in on anyone who is at the bottom of the trench. The Act is designed to prevent trenching or excavation accidents.

The Department of Labour has been active in promoting the Act amongst the various municipalities. As a result of strenous efforts by the Department, over 900 municipalities in Ontario have appointed trench inspectors in compliance with the Act. By comparison, the evidence indicates that very few municipalities have complied with *The Building Trades Protection Act* by appointing an inspector.

The Township of North York has an excellent record of inspections. In the period between January 1, 1956, and May 31, 1960, inspectors of that municipality made 27,524 inspections of trenches and excavations pursuant to the statute.

To assist both municipalities and the Department with the problem of enforcement, the Commission recommends that a system of annual returns should be devised. The Department should send a form of return to every municipality in the Province each year, to be completed by the trench inspector in each local area. It would include such information as the name of the inspector, the number of inspections which he had made in the preceding year, the number of trench cave-ins and the reasons for them, the number of accidents, fatal and otherwise, and the number of prosecutions made pursuant to the Act. The Commission feels that in this way all municipalities would be reminded of their responsibilities under the Act.

Since violations of the Act can have serious, indeed fatal, consequences, the penalties now laid down in this legislation should be increased. Section 5 of the Act is as follows:

> "(1) Where an inspector finds that any provision of this Act or the regulations is being contravened, he may give such order in writing as he thinks necessary to secure compliance therewith and, until such order is carried out, the work upon that part of the trench in which the contravention occurs shall be suspended.
>
> (2) Every person to whom an order of an inspector is directed who contravenes or knowingly permits any person under his direction or control to contravene such order or to carry on work in contravention of subsection 1 is guilty of an offence and on summary conviction is liable to a fine of not less than $10 and not more than $100 for every day upon which the contravention continues."

The penalty of $100 should become $200. The minimum penalty of $10 should be deleted because such a small fine is pointless.

Section 24 states that anyone who contravenes any provision of the Act or regulations is liable to a fine of not more than $500. For the reasons stated above, this figure should be increased to $1,000.

The final recommendation of the Commission in connection with the problem of enforcement is that the Act should clearly state that the ultimate responsibility for its administration, enforcement, review and amendment, lies with the Department of Labour.

In view of the amount of excavation and trenching performed by municipal commissions and departments, it is desirable that the Act be clarified to ensure its application to such operations. In such cases, enforcement might depend upon inspection by departmental inspectors.

The Commission heard several complaints about the lack of experience and knowledge on the part of some municipal trench inspectors. Subsection (1) of Section 3 of the Act should be amended by adding the word "competent" so that it would read:

> "The council of every local municipality shall, by by-law, appoint one or more competent inspectors to enforce this Act in the municipality."

Section 5 has been set out in full above. Subsection (1) thereof should be amended to read as follows:

> "Where an inspector finds that any provision of this Act or the regulations is being contravened, he *shall* give such order as he thinks necessary to secure compliance therewith *and shall report such violation forthwith* and, until such order is carried out, the work upon that part of the trench in which the contravention occurs shall be suspended."

Section 6 of the Act provides that an inspector must be notified of any proposed trench. The Commission recommends that such notice must be given at least 24 hours in advance. A number of municipal inspectors informed the Commission that a problem often arises when work in or on a trench is suspended for a period of several weeks. In such cases, it is essential that there should be another inspection before work is resumed. Moisture conditions, for example, may have changed. Therefore, this section should provide that, if there has been a cessation of work for at least one week, the inspector should be notified again before work is resumed.

A number of witnesses suggested that in certain cases metal boxes could be used to brace the sides of trenches, instead of more conventional methods of shoring. The Commission suggests that this idea should be studied by the Department of Labour.

Subsection (1) of Section 8 provides that the sides of all trenches exceeding four feet in depth must be securely shored and timbered. Subsection (2) of the same section provides that Subsection (1) does not apply where the sloped sides of the trench do not have more than one foot of vertical rise to each foot of horizontal run. In a brief presented to the Commission, Mr. J. Owen Lake, a Consulting Engineer with considerable experience in soil testing and analysis, said this:

> "It is to be particularly noted that the Act itself contains a dangerous provision under Subsection (2) of Section 8 whereby it is inferred that if the sides of a trench are sloped to not more than one foot of vertical rise to each foot of horizontal run, such an excavation will be safe. Actually this belief is a most dangerous fallacy, because the safe slope is not a constant for cohesive types of soil, and in very soft clays and silts a sudden slide of a large mass of soil into the excavation would occur before the

depth of such an unbraced excavation reached to 15 feet depending on the actual strength of the soil in shear. Thus this particular part of the Act is positively dangerous."

The Commission believes that 45 degrees is too steep. The permissible slope under Subsection (2) of Section 8 should be substantially decreased. This subsection should be rewritten, and should distinguish between various types of soils.

Subsection (6) of Section 8 is as follows:

"Where the shoring and timbering is to be removed on completion of the other work in a trench, such removal shall be done by or under the personal supervision of a person experienced in removing shoring and timbering."

Numerous accidents have occurred because shoring has been removed before back fill has been placed in the trench. Back fill is soil placed in the trench when the trench is no longer needed. Subsection (6) should provide that shoring will not be completely removed before sufficient back fill is placed in the trench unless an inspector otherwise orders.

Many complaints were received by the Commission concerning the use of a backhoe. A backhoe consists of a scoop on the end of a movable boom. The boom is mounted in a cab which runs on wheels or treads similar to tractor treads. In effect a backhoe is a shovel in reverse, and its proper use is digging, loading and dumping earth. Backhoes are often used to lower pipe into trenches. The Commission has come to the conclusion that in certain circumstances this is a dangerous practice. The Commission recommends that backhoes must not be used to lower pipe into trenches unless the pipe is in relatively short lengths and is no more than six inches in diameter. A crane should be used to lower larger pipe into trenches. Furthermore, no person should be allowed to stand inside or ride upon a section of pipe which is being lowered into a trench; nor should anyone be permitted to stand under or immediately adjacent to pipe being placed in a trench. In addition, no person should be allowed to stand under any machinery which is beside or over a trench. Finally, no machinery of any description shall be used in any manner likely to cause the collapse of a trench. Section 15 must be amended by adding suitable subsections which will provide for the above recommendations.

Section 17 of the Act requires that guards, barricades and illumination should be provided around trenches to prevent people falling into them. Subsection (3) of Section 17 is as follows:

"This section applies only to a trench in or adjacent to a public or private way."

The Commission recommends that Section 17 should be made applicable to all trenches on public property except in remote areas.

Section 20 of the Act states that no person shall work in a trench more than six feet in depth unless he is wearing a protective hat. Persons working in such trenches should also be required to wear safety boots.

Section 21 of the Act is as follows:

"No person shall be allowed to work alone in a trench exceeding twenty feet in depth unless another person is on duty outside the trench in close proximity to the part of the trench in which the other person is working."

Trench inspectors from Etobicoke Township, the City of Toronto, North York Township, York Township, Windsor, Port Arthur and Fort William, agreed that this provision should apply to all trenches deeper than six feet. The Act should be amended accordingly.

One satisfactory method of providing lateral support for the walls of a trench is the use of a puncheon. Puncheons are of considerable assistance if properly used, but may well be dangerous if not properly inserted and installed along the sides of the trench. Regulations 2, 3 and 4 under the Act provide for methods of shoring and timbering. These regulations should be amended to cover the proper use of puncheons.

The Commission further recommends that a wire basket or similar equipment be available for stretcher purposes at all excavations having a depth of eight feet or more.

The Department of Labour is to be commended with respect to the manner in which it has administered *The Trench Excavators Protection Act.* There can be no doubt that many lives have been saved because of the existence and enforcement of this Act.

As the Commission has stated above, this is an excellent piece of legislation. If accidents occur, they are caused by carelessness, indifference of employers, and laxity of enforcement. The Commission recommends that inspectors be vigilant, and that prosecutions be launched *before* accidents happen.

CONCLUSION

In conclusion your Commissioners wish to express their thanks to the members of the Department of Labour whose assistance and co-operation have greatly facilitated the work of the Commission.

We are also under a debt of gratitude to the employee unions, the employer associations and the several individuals who gave their time and effort to preparing submissions and who came before the Commission to suggest and discuss problems pertinent to industrial safety and to propose improvements. This assistance has been of immense value to the Commission.

In the briefs received and evidence heard references were made to matters which, in one aspect, might be regarded as beyond the scope of our reference but that had an important bearing upon the problems involved. Accordingly, we decided to give these matters consideration and make recommendations in relation thereto.

To the several expert witnesses who gave us the benefit of their knowledge and experience, we are grateful.

All of which is respectfully submitted for the consideration of Your Honour.

P. J. McANDREW,
Chairman.

J. D. BATEMAN,

G. RUSSELL HARVEY.

Dated this 16th day of October, 1961.

APPENDIX "A"

(Seal) Crest

PROVINCE OF ONTARIO

ELIZABETH THE SECOND, by the Grace of God, of the United Kingdom, Canada and Her Other Realms and Territories, Queen, Head of the Commonwealth, Defender of the Faith.

To His Honour Judge P. J. McAndrew, Judge of the District Court of the District of Thunder Bay, J. Danvers Bateman, Consulting Geologist, and Russell Harvey, Esquire,

GREETING:

WHEREAS in and by Chapter 308 of The Revised Statutes of Ontario, 1950, entitled "*The Public Inquires Act*", it is enacted that whenever Our Lieutenant-Governor in Council deems it expedient to cause inquiry to be made concerning any matter connected with or affecting the good government of Ontario, or the conduct of any part of the public business thereof, or of the administration of justice therein, and such inquiry is not regulated by any special law, he may, by Commission, appoint one or more persons to conduct such inquiry, and may confer the power of summoning any person and requiring him to give evidence on oath, and to produce such documents and things as the Commissioner or Commissioners deem requisite for the full investigation of the matters into which he or they are appointed to examine;

AND WHEREAS Our Lieutenant-Governor in Council of Our Province of Ontario deems it expedient to cause inquiry to be made concerning the matters hereinafter mentioned;

NOW KNOW YE that WE, having and reposing full trust and confidence in you the said P. J. McAndrew, J. Danvers Bateman and Russell Harvey, DO HEREBY APPOINT you to be Our Commissioners to inquire into and report upon all statutes and regulations administered by the Department of Labour that govern the safety of workers with a view to the improvement, simplification, clarification and modernization of such statutes and regulations;

AND WE DO HEREBY CONFER on you Our said Commissioners the power to summon any person and require him to give evidence on oath and to produce such documents and things as you Our said Commissioners deem requisite for the full investigation of the matter into which you are appointed to examine;

TO HAVE, HOLD AND ENJOY the said Office and authority of Commissioners for and during the pleasure of Our Lieutenant-Governor in Council for Our Province of Ontario.

IN TESTIMONY WHEREOF We have caused these Our Letters to be made Patent and the Great Seal of Our Province of Ontario to be hereunto affixed.

WITNESS:

THE HONOURABLE JOHN KEILLER MacKAY, a Companion of Our Distinguished Service Order, upon whom has been conferred Our Volunteer Officers' Decoration, One of Our Counsel learned in the Law, a Lieutenant-Colonel in Our Canadian Army Supplementary Reserve, Doctor of Civil Law, Doctor of Laws, LIEUTENANT-GOVERNOR OF OUR PROVINCE OF ONTARIO,

at Our City of Toronto in Our said Province this seventh day of April in the year of Our Lord one thousand nine hundred and sixty and in the ninth year of Our Reign.

BY COMMAND

MACKINNON PHILLIPS,
Provincial Secretary.

APPENDIX "B"

PUBLICATION OF NOTICES OF HEARINGS CONDUCTED BY THE COMMISSION

The Hamilton Spectator	May 13 and 26, 1960
The Kingston Whig-Standard	May 13 and 26, 1960
The Ottawa Citizen	May 13 and 26, 1960
The Ottawa Journal	May 13 and 26, 1960
The Sault Daily Star	May 13 and 26, 1960
The Telegram, Toronto	May 13 and 26, 1960
Toronto Star Limited	May 13 and 26, 1960
The Windsor Daily Star	May 13 and 26, 1960, October 31, 1960
The Globe and Mail, Toronto	May 13 and 26, 1960, September 12, 1960, October 3, 1960, November 7, 1960
The Daily Press, Timmins	May 16 and 26, 1960
The London Daily Press	May 16 and 26, 1960
The St. Catharines Standard	May 16 and 26, 1960
The Sudbury Daily Star	May 16 and 26, 1960
The News Chronicle, Port Arthur	May 16 and 26, 1960, October 11 and 17, 1960
The Daily Times-Journal, Fort William	October 11 and 17, 1960

APPENDIX "C"

WITNESSES WHO TESTIFIED BEFORE THE COMMISSION

Allan, James	Building Inspector, Town of Riverside (also Trench and Plumbing Inspector)
Anderson, R. G. D.	General Manager, Industrial Accident Prevention Associations
Antonio, ...	Labourer, Coxwell Avenue tunnel job
Archer, David Bruce	President, The Ontario Federation of Labour, C.L.C.
Behie, Douglas E.	Caisson Inspector, Ontario Department of Labour
Bentley, William Alexander	Sales Manager, Dominion Bridge Company Limited
Brookbanks, Frederick B.	President, Ontario Recreation Association
Brooks, John Henry	Building Inspector (concrete excavations and reinforced concrete), City of Toronto
Burrows, William H.	Inspector (concrete and reinforced steel), City of Toronto
Carrière, Brigadier Jean Paul	Executive Vice-President, Franki of Canada (foundation specialists). A Professional Engineer, Chairman of sub-committee revising Part 8 of the National Building Code
Clark, Ross Leopold	Commissioner of Works, Metro Toronto
Cole, William	Trench Inspector, Township of North York
Cox, Cyril Trevor	Secretary-Manager, Ontario General Contractors Association
Davidson, Thomas L.	Union Co-ordinator, United Electrical Radio and Machine Workers of America (UE)
DeGrace, Robert F.	Executive Vice-President, Canadian Institute of Timber Construction
Dickinson, William J.	Organizer, Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, Lodge 650, Elevator Division
Ehmke, Fred. William	Chief Elevator Inspector, Ontario Department of Labour
Evans, George	Professional Engineer and Chemical Engineer, Polymer Corporation, Sarnia
Falls, Orville	Commissioner of Works, Township of York
Fell, Thomas	City Engineer, City of Port Arthur
Ferrer, Patrick	Member, Local 523, United Electrical, Radio and Machine Workers of America (UE)
Ferrier, William G.	Chief Engineer, Otis Elevator Company Limited
Fraser, Willard Bruce	Chairman, The Canadian Manufacturers' Association Committee studying The Operating Engineers Act, Engineering Department, Canadian Industries Limited, Montreal
Furlong, John	Design Engineer, on behalf of The Institute of Chartered Engineers of Ontario
Gallagher, Gerald	Secretary-Treasurer, Local 183, International Hod Carriers, Building & Common Laborers Union
Garneau, Charles	Building Inspector, Township of Sandwich East
Gibson, Charles Grant	Director of Technical Services, Ontario Department of Labour
Gilham, David Ronald	Construction Engineer, Power Section, Township of North York
Gilpin, Dalton M.	Construction Section Head, Public Utilities, Township of Etobicoke
Greig, John R. M.	Building Inspector, Township of York
Hamilton, Douglas F.	Secretary-Treasurer, The Ontario Federation of Labour, C.L.C.
Hammersley, John R.	Chairman, Compensation, Safety and Health Committee, Local 1005, United Steelworkers of America
Heenan, Alfred T.	Chief Building Inspector, Township of Etobicoke
Herron, Harvey A.	Business Representative, Local 793, International Union of Operating Engineers

Hill, Rowland George	Canadian Director, International Union of Operating Engineers
Hill, Samuel G.	Employee, The Hydro-Electric Power Commission of Ontario, in charge of safety and fire protection, St. Lawrence Power Project
Hillborn, Nelson T.	Vice-President, Ontario Provincial Council of Carpenters and Joiners of America
Horgan, Francis J.	Chief Engineer, Project Division of Works Department, Metro Toronto
Hubber-Richard, Richard A.	Chairman, Lakehead Terminal Elevators Association, which comprises all grain elevator companies at the lakehead
Hutchinson, Leslie J.	Chief Inspector of Boilers, Ontario Department of Labour
Hyam, John	Chief Operating Engineer, Hiram Walker, Gooderham and Worts, on behalf of The Institute of Chartered Engineers of Ontario
Ingham, George	Member and Trustee, Sudbury Mine, Mill and Smelter Workers Union, Local 598
Irwin, Leslie C.	District Manager, Searle Elevators (lakehead)
Jones, Donald Frank	Examiner of Plans, Factory Inspection Branch, Ontario Department of Labour
Johnston, Elmer	Business Agent, Local 2693, Northern Ontario District Council, Lumber and Sawmill Workers Union of the United Brotherhood of Carpenters and Joiners of America (AFL-CIO)
Johnston, Sydney R.	Solicitor, Workmen's Compensation Board
Keddy, Lawrence R.	Deputy Building Commissioner, City of Windsor
Kelly, Alfred	Divisional Superintendent (construction and maintenance of sewers, watermains, sidewalks and pavements), City of Toronto
Knight, George Edward	Foreman (sewer work), City of Toronto
Kobryn, Henry	Business Agent, International Association of Bridge, Structural and Ornamental Iron Workers, Local 700; Secretary, Building Trades Council, Windsor
Krouse, Frank	Business Agent, United Electrical, Radio and Machine Workers of America (UE)
Lacey, Arthur Leonard	Chairman, Board of Examiners of Operating Engineers, Ontario Department of Labour
Lake, John Owen	Consulting Engineer
Lahti, Lauri Leonard	Building Inspector, City of Port Arthur
Lamoureux, R. J.	Safety Director, United Steelworkers of America
Lindeman, Clifford R.	Superintendent, Saskatchewan Pool Elevators (lakehead)
Little, Raymond G.	Inspector, Board of Examiners of Operating Engineers, Ontario Department of Labour
Little, Stanley A.	National President, National Union of Public Service Employees
Loftus, Robert G.	President, Industrial Accident Prevention Associations of Ontario
MacDonald, Alan G.	Comptroller, Workmen's Compensation Board
Magnuson, Bruce	Ontario leader, Communist Party of Canada
Maguire, Patrick	Building Commissioner, City of Windsor
Marshall, John A.	City Engineer, City of Fort William
Matteo, ...	Labourer, Coxwell Avenue tunnel and Hogg's Hollow tunnel jobs
McCollion, Alexander L.	Member, Compensation, Safety and Health Committee, Local 1005, United Steelworkers of America
McCurdy, George F.	Secretary-Treasurer, Ontario Provincial Council of the United Brotherhood of Carpenters and Joiners of America
McLean, Kenneth C.	Inspector (caissons and tunnels), Ontario Department of Labour
McLeese, Willis	President, Trans-Canada Freezers Limited, this firm a member of the Canadian Warehousemen's Association

McLorg, Terrence W.	Executive Secretary, Canadian Refrigeration and Air Conditioning Association
McMillan, Donald	Chairman, Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, Lodge 650, Elevator Division
McParland, Donald J.	Mechanical Engineer, Rio Tinto Mining Company of Canada Limited
Michele, ...	Labourer, Coxwell Avenue tunnel and Hogg's Hollow tunnel jobs
Middleton, Raymond J.	Medical Doctor. Medical Director, Coxwell Avenue tunnel job from August, 1958, to February, 1960. Medical Director, Robert McAlpine Limited, General Contractors, T.T.C. Subway (research, caisson disease)
Milling, Gordon B.	Director of Research, The Ontario Federation of Labour, C.L.C.
Mitchell, Magnus	Chief Building Inspector, City of Windsor
Morgan, David F. P.	Executive Assistant to the President, Grocery Products Manufacturers of Canada
Morse, Allan Ross	Electrical Engineer, National Research Council, Ottawa
Mott, R. C.	Vice-President in Charge of Production, Falconbridge Nickel Mines Limited; Director, Ontario Mining Association
Munro, William J.	Caisson Inspector, Ontario Department of Labour
Munroe, Everett H.	Engineer, Water and Sewage; Trench Inspector, Township of York
Nichols, Michael H.	President, Provincial Building and Construction Trades Council of Ontario
Nigro, Antonio	Labourer, Coxwell Avenue tunnel job
Ohrt, John H.	Caisson and Tunnel Inspector, Ontario Department of Labour
Oliver, Thomas A.	Detective, Town of Burlington Police Department
Onley, Charles E.	Solicitor, Township of Scarborough
Parker, John H.	Trustee, Ontario Provincial Council, International Union of Operating Engineers
Pasleske, Walter	Acting Chief Inspector re The Trench Excavators Protection Act, Township of Etobicoke
Payne, John E.	Consultant to the City of Toronto Building Department
Pedoni, John C.	Administrator, Italian Immigrant Aid Society
Perkins, Arthur R.	Trench Inspector, Township of Scarborough
Petrone, Francis	Injured Grain Elevator Worker, Port Arthur
Petta, George	Recording and Corresponding Secretary, Local 811, International Hod Carriers, Building & Common Laborers Union
Pitts, Robert John	President, Ontario Road Builders' Association; General Manager, J. N. Pitts Limited
Pollock, Carl A.	Chairman, Ontario Division, The Canadian Manufacturers' Association
Quinnell, John G.	Chief Building Inspector, Township of North York
Robinson, John R.	International Representative; Chairman, Legislative Committee, Ontario Provincial Council, International Union of Operating Engineers
Robinson, Joseph B.	Trench Inspector, Township of Sandwich East
Russell, Norman E.	Chairman, Workmen's Compensation Committee, The Canadian Manufacturers' Association
Sandor, George	Trench Inspector, Township of Sandwich West
Scannell, James	President, Local 541, United Electrical, Radio and Machine Workers of America (UE)
Sellers, Ernest G.	District Inspector (lakehead), Ontario Department of Labour
Shaw, Donald B.	Member, Board of Examiners of Operating Engineers, Ontario Department of Labour
Simmons, Edward H.	Orthopedic Surgeon, Toronto East General Hospital (reasearch, caisson disease)

Smith, James Edward	Steeplejack
Stephanovitch, William	Ontario Regional Director, United Brotherhood of Carpenters and Joiners of America
Storey, Dwight	Legislative Representative, United Steelworkers of America
Sylvester, George E.	Caisson Inspector, Ontario Department of Labour
Thibault, Nelson	Director of Health, Safety and Legislative Activity, International Union of Mine, Mill and Smelter Workers
Thompson, Kenly	Member, Local 541, United Electrical, Radio and Machine Workers of America (UE)
Thompson, William D.	Chief Building Inspector and Planning Administrator, City of Fort William
Turton, Ronald	Chief Inspector, Factory Inspection Branch, Ontario Department of Labour
Valentini, Ernesto	Chairman, Italo-Canadian (Toronto) Workers Protective Association
Vick, Constance	Member, Local 507, United Electrical, Radio and Machine Workers of America (UE)
Wallace, Kenneth R.	Design Engineer, City of Toronto
Walton, Ross	Deputy Building Commissioner, Township of Scarborough
Wedge, John	International Representative, International Union of Operating Engineers
Weir, Charles	Labour Secretary, Ontario Committee, Communist Party of Canada
Welsh, William J.	Ontario Legislative Chairman, Institute of Power Engineers

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The surnames of the three aforementioned Italian labourers who worked at the Hogg's Hollow tunnel job and/or the Coxwell Avenue tunnel job were not made public, at their own request.

APPENDIX "D"

BRIEFS AND EXHIBITS SUBMITTED TO THE COMMISSION

No. "A"	Brief of Ontario Department of Labour dated June 2nd, 1960.
No. 1	Submission of The Corporation of the Township of Scarborough.
No. 2	Township of North York By-law No. 13925, to regulate and control the excavation of trenches, enacted and passed March 9th, 1959.
No. 3	Accident report (letter) dated November 2nd, 1951.
No. 4	Brief of Mr. W. Cole, Trench Inspector, Township of North York, with T.T.C. Subway accident summary attached.
No. 5	Township of York, Department of Works, Notification of Commencement of Work under *The Trench Excavators Protection Act*, Form G-201 (blank).
No. 6	Township of York, Building Department, Draft Plan and Building Permit, General Conditions of Approval, Form G-206 (blank).
No. 7	Township of York, Department of Works, Roadway Section, Street Occupation Permit, Form E-131 (blank).
No. 8	Township of York, Department of Works, Roadway Section, Occupation Card, Form E-130 (blank).
No. 9	Department of Buildings, Toronto, Wood shoring (blueprint), Data Sheet No. 93.
No. 10	Department of Buildings, Toronto, Wood shoring (blue print), Data Sheet No. 92.
No. 11	City of Toronto By-law No. 9868, to Regulate Erection and Provide for the Safety of Buildings; copy of letter from Mr. J. E. Payne, former Chief Building Inspector and Temporary Consultant to the Building Commissioner, City of Toronto, to the Secretary, Royal Commission on Industrial Safety, dated January 7th, 1960, in re suggested additions to *The Building Trades Protection Act*; copies of Data Sheets (Exhibits 9 and 10); Data Sheet No. 13 (blueprint) re Hoardings and Covered Way; copy of letter dated June 2nd, 1959, from Mr. S. G. Beckett, Commissioner of Buildings and Development, to the Board of Trade of Metropolitan Toronto; copy of Memorandum dated March 1st, 1960, signed by the Chief of Police, The Commissioner of Public Works, and the Commissioner of Buildings and Development, in re the hoisting or lowering of building materials, equipment and scaffolding over streets or lanes; memorandum dated April 10th, 1959, from Mr. J. E. Payne, Chief Inspector, to the Department of Buildings, Toronto, with four photographs attached thereto.
No. 12	Table of total employees, total accidents including fatalities, submitted by Mr. R. Turton, Chief Factory Inspector, Ontario Department of Labour, for years 1950 to 1960 inclusive.
No. 13	Table headed "Cause of Escalator Accidents, for fiscal year 1957-8"—with document attached headed "Twenty Causes of Escalator Accidents".
No. 14	Table of classes of Installations in Ontario, Elevator Inspection Branch, Ontario Department of Labour.
No. 15	Safety Inspection Violation Report—Stop Work Order (2 copies), Engineering Department, Township of Etobicoke.
No. 16	Tunnel check inspection form, Metro Toronto (blank).
No. 17	Memorandum, The Municipality of Metropolitan Toronto, Department of Works, Project Division, in re "Safety in Tunnelling".
No. 18	Brief of Ontario Provincial Council, United Brotherhood of Carpenters and Joiners of America.
No. 19	Brief of Mr. J. E. C. Smith (steeplejack).
No. 20	Additional handwritten document of Mr. J. E. C. Smith (steeplejack).
No. 21	Brief of Ernesto Valentini, Chairman, Italo-Canadian (Toronto) Workers Protective Association.
No. 22	Brief of Local 1005, United Steelworkers of America.
No. 23	Letter dated September 14th, 1960, from Mr. J. G. Quinnell, Chief Building Inspector, Township of North York, to the Commission; Brief of the Township of North York, together with copy of Fort Lauderdale, Florida, and Fort Collins, Colorado, safety codes.
No. 24	Brief of United Steelworkers of America.
No. 25	Brief of Ontario Committee, Communist Party of Canada.
No. 26	Brief of United Electrical, Radio and Machine Workers of America (UE).
No. 27	Brief of United Electrical, Radio and Machine Workers of America (UE), in re proposed Foundry Act.
No. 28	Brief of International Union of Mine, Mill and Smelter Workers (Canada).

No. 29 General Accident Prevention Regulations, effective September 1st, 1960 (Workmen's Compensation Board), *Workmen's Compensation Act*, British Columbia.

No. 30 Memorandum to all Industrial Plants in Manitoba, from Mr. O. D. Hamilton, Chief Inspector, Employment Standards Division, Department of Labour, Manitoba.

No. 31 Submission of Local 902, International Union of Mine, Mill and Smelter Workers, in re "Safety and Health Conditions at Neelon Steel Ltd." (Sudbury District).

No. 32 Brief of Ontario General Contractors Association, together with miscellaneous safety booklets and pamphlets.

No. 33 Brief of Mr. Samuel G. Hill (in charge of safety and fire prevention, The Hydro-Electric Power Commission of Ontario) (St. Lawrence Power Project).

No. 34 Brief of The Ontario Federation of Labour, C.L.C.

No. 35 Brief (letter) of Canadian Refrigeration and Air Conditioning Association.

No. 36 Instructions for Installation, Operation, Maintenance and Service, enclosed Ammonia Compressors, York Corporation, York, Pa.

No. 37 Service Manual (V/W Compressor Units, Freon and Ammonia), York Corporation, York, Pa.

No. 38 Booklet, "York, Hermetic Compressor Units and Condensing Units" (M Form MS 19 TM).

No. 39 Booklet "York, Hermetic Turbopak Water Chilling Systems" (Catalog EM 60-2235).

No. 40 Photograph of two compressors (one large, one small).

No. 41 Brief (letter) of Institute of Power Engineers, together with booklet, "A Brief for Submission to The Honourable Charles Daley, containing Revision to *The Operating Engineers Act, 1953*".

No. 42 Brief of Ontario Division, The Canadian Manufacturers' Association, on *The Operating Engineers Act, 1953.*

No. 43 Brief of Ontario Mining Association, and addendum thereto, together with Annual Report of the Mines Inspection Branch, 1959, Ontario Department of Mines.

No. 44 Brief of Ontario Division, The Canadian Manufacturers' Association, on the Safety of Workers.

No. 45 Booklet, "The International Operating Engineer", dated August, 1959.

No. 46 Booklet, "The International Operating Engineer", dated April, 1960.

No. 47A Brief of Ontario Provincial Council, International Union of Operating Engineers.

No. 47B Brief, "Presented to the Honourable Charles Daley, Minister of Labour, Province of Ontario, by the Ontario Provincial Council, International Union of Operating Engineers".

No. 48 Newspaper, "The Gauge", dated April, 1959 (monthly newspaper of Local 796, International Union of Operating Engineers).

No. 49 "Canadian Regulations for the Construction and Inspection of Boilers and Pressure Vessels, Fifth Edition, Canadian Standards Association".

No. 50 Booklet, "The International Operating Engineer", dated February, 1958.

No. 51 Brief of National Union of Public Service Employees, C.L.C.

No. 52 *Regulations made under The Department of Labour Act* (Ontario) *respecting the Protection of Persons working in Compressed Air, Tunnels, Open Caissons, Coffer Dams and Crib Work.*

No. 53 Regulations for Tunnel Construction and Work in Compressed Air, Department of Labor and Industry, Pennsylvania.

No. 54 Wisconsin Administrative Code, Rules of Industrial Commission, Trench, Excavation and Tunnel Construction.

No. 55 Health and Safety Act and Health and Safety Rules, Industrial Commission of Illinois.

No. 56 Specific Safety Requirements relating to Building and Construction Work, Ohio (Bulletin No. 202).

No. 57 Rules Relating to Work in Compressed Air (Tunnels and Caissons), Board of Standards and Appeals, Department of Labor, State of New York.

No. 58 New York State Labor Law.

No. 59 Rules and Regulations Governing Work in Compressed Air and Tunnel Construction, Department of Labor, State of New Jersey.

No. 60 Recommendations submitted by Mr. J. H. Ohrt, Caisson and Tunnel Inspector, Ontario Factory Inspection Branch, in re compressed air tunnels.

No. 61 Brief of Industrial Accident Prevention Association of Ontario, together with undated letter to the Commission from Mr. R. G. Loftus, President.

No. 62 Small metal box containing 36 photographic slides (coloured), submitted to Commission by Mr. John Wedge, International Representative, International Union of Operating Engineers.

No. 63 Brief of Provincial Building and Construction Trades Council of Ontario, together with Code of Construction Safety Measures, National Research Council, Canada.

No. 64 Brief of Sudbury Mine, Mill and Smelter Workers Union, Local 598, together with copy of letter dated September 1st, 1960, to Mr. J. A. Hoolihan, Commission Counsel, from Mr. J. P. Hickey, "Welfare and Compensation Chairman".

No. 65 Newspaper, "598 News", published by Sudbury Mine, Mill and Smelter Workers Union, Local 598, Sudbury, Ontario, March 22nd, 1960.

No. 66 Letter dated July 11th, 1960, from Mr. H. Cecil Rhodes, Managing Director, Canadian Warehousemen's Association, to the Commission, with copy of letter dated March 31st, 1960, from Mr. Rhodes to the Honourable Charles Daley, Ontario Minister of Labour, and letter from Mr. Rhodes to the Commission, dated October 13th, 1960.

No. 67 Brief of Canadian Institute of Timber Construction.

No. 68 Brief of The Ontario Road Builders' Association.

No. 69 Booklet, "Four-way Benefits of Prequalification of Contractors", published by Ontario Road Builders' Association.

No. 70 Brief of Northern Ontario District Council of Lumber and Sawmill Workers Union of the United Brotherhood of Carpenters and Joiners of America (AFL-CIO).

No. 71 Brief of Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, Lodge 650, Elevator Division, Port Arthur and Fort William.

No. 72 Grain Elevators Regulations made under *The Factory, Shop and Office Building Act* (Ontario Department of Labour), 1957.

No. 73 Collective Agreement dated July 30th, 1959, between Lakehead Elevator firms and Local No. 650, Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, Elevator Division.

No. 74 Brief of Lakehead Terminal Elevators Association.

No. 75 Statement showing sums spent in the years 1945-60 by terminal elevator companies at the lakehead on modifications to their elevators prompted by considerations of safety.

No. 76 Safety Suggestion form (blank), "Sakatchewan Pool Terminals Ltd.".

No. 77 Form (blank), "Superintendent's Inspection Report as to Conditions in Our Terminals", (Saskatchewan Pool Terminals Ltd.).

No. 78 Brief (letter) of International Association of Bridge, Structural and Ornamental Iron Workers, Local 700.

No. 79 Summarization of Brief of International Association of Bridge, Structural and Ornamental Iron Workers, Local 700.

No. 80 Steel Erectors Handbook.

No. 81 Letter from Mr. James N. Shephard, General Manager, Construction Safety Associations of Ontario, dated July 29th, 1960, to Mr. Henry Kobryn, Business Agent, Local 700, International Association of Bridge, Structural and Ornamental Iron Workers.

No. 82 Brief of Mr. J. Owen Lake (and Associates), Consulting Engineers.

No. 83 Brief (letter) of Canadian Electrical Manufacturers Association.

No. 84 Brief of Grocery Products Manufacturers of Canada.

No. 85 Draft copy, National Building Code of Canada (1960), Part 8.

No. 86 Copy of *The Building Trades Protection Act.*

No. 87 Booklet, "The Explosive Characteristics of Elevator Dusts", by J. M. Roxburgh.

No. 88 Copy of letter (with enclosures) from Mr. A. J. McKichan, Secretary, Lakehead Terminal Elevators Association, to Mr. J. Hoolihan, Commission Counsel, dated November 8th, 1960.

No. 89 Copy of letter dated November 14th, 1960, from Mr. J. M. Roxburgh to Mr. A. R. Morse, Radio and Electrical Engineering Division, National Research Council, Ottawa.

No. 90 Three tables re fatalities, frequency rates and severity rates, 1958 and 1959, submitted by the Workmen's Compensation Board (Ontario).

No. 91 Brief of Northern Ontario Recreation Association.

No. 92 Ontario Recreation Association Notice to Members.

No. 93 Brief of Ontario Department of Labour, dated November, 1960.

No. 94 Table of Accident Frequency Rates—Ontario and all Canada, 1955 to 1959.

No. 95 Supplementary Brief of Ontario General Contractors Association.

No. 96 Copy of letter from Mr. H. N. Pendleton, Manager, Dravo Construction Ltd., to Commission, dated October 13th, 1960.

No. 97 Letter and attached material from Mr. Lars André, Stockholm, Sweden, to the Commission Secretary, dated May 28th, 1960.

No. 98 Copies of statutes, regulations, rules, re safety, etc., State of Maine.

No. 99 Copies of statutes, regulations, rules, etc., State of New Jersey.

No. 100 Handbook of Rules Governing the Operation of Mines, 1959 (Ontario).

No. 101 Copies of Safety Orders, State of California.

No. 102 Letter from Mr. Leo J. Dunn, Deputy Commissioner, Labor Department, State of Connecticut, to the Commission Secretary, dated May 23rd, 1960, together with copies of laws, rules and safety regulations.

No. 103 Copies of laws, rules and safety regulations, State of Massachusetts.

No. 104 Letter from Mr. A. W. Motley, Director, United States Department of Labor, Washington, D.C., together with copies of United States Mine Safety Codes, Statutes, Rules and Regulations.

No. 105 Copies of statutes, laws, rules and regulations, State of Ohio.

No. 106 Copy of letter from Dr. Morris Kleinfeld, Director, Division of Industrial Hygiene, Department of Labor, State of New York, to Commissioner Dr. J. D. Bateman, dated June 30th, 1960.

No. 107 Copies of Industrial Codes, Rules, State of New York.

No. 108 Copies of Safe Practices Recommendations, laws, regulations, State of Pennsylvania.

No. 109 Letter (and enclosures) dated November 17th, 1960, from Mr. William Cole, Trenching Act Inspector, Township of North York, to the Commission Secretary.

No. 110 Rules for Construction of Unfired Boiler and Pressure Vessels; Boiler Inspection Laws and Rules (1954), Boiler Inspection Laws and Rules (1955).

No. 111 Wisconsin Administrative Code, Rules of Industrial Commission.

No. 112 Copies of Building Exits Code, 1960, and National Electric Code, 1959, of the National Fire Protection Association, Boston, Massachusetts.

No. 113 Uniform Building Code, 1958 (International Conference of Building Officials), Los Angeles, California.

No. 114 Copy of "Accident Facts", 1959, National Safety Council, Chicago, Illinois.

No. 115 Accident Prevention Manual for Industrial Operations (4th Edition), National Safety Council, Chicago, Illinois.

No. 116 National Safety Council Safe Practices pamphlets, Chicago, Illinois.

No. 117 Submission of Lakehead Terminal Elevators Association.

No. 118 Letter dated June 4th, 1960, from Miss Frances M. Ashall, to Commission.

No. 119 Newspaper, "Steel Labor", dated September, 1960, containing article entitled "Safety, one authority . . . one code per industry—with teeth".

No. 120 Four photographs depicting two workmen working on balcony of building.

No. 121 Photograph depicting workman on planking.

No. 122 Six photographs depicting unloading and hoisting of steel joists, and various workmen engaged in suggested unsafe practices.

No. 123 Photograph depicting two workmen standing on scaffolding.

No. 124 Two photographs depicting unprotected elevator shaft.

No. 125 Five photographs depicting material hoist and workmen engaged thereon.

No. 126 Six photographs depicting hole adjacent to highway.

No. 127 Brief of The Institute of Chartered Engineers of Ontario.

No. 128 Letter dated June 21st, 1960, from Mr. William L. Batt, Jr., Secretary of Labor and Industry, State of Pennsylvania, to Commissioner Dr. J. D. Bateman; letter dated June 16th, 1960, from Marion E. Martin, Commissioner of Labor and Industry, State of Maine, to Commissioner Dr. J. D. Bateman; letter dated August 25th, 1960, from Mr. Raymond F. O'Connell, General Counsel, Department of Labor and Industries, State of Massachusetts, to Commissioner Dr. J. D. Bateman; letter dated June 30th, 1960, from Morris Kleinfeld, M.D., Director, Division of Industrial Hygiene, Department of Labor, State of New York, to Commissioner Dr. J. D. Bateman; letter dated May 17th, 1960, from Mr. Arthur J. Becker, Chief, Safety Inspection Division, Industrial Commission of Colorado, to Commission Secretary.

No. 129 Letter dated November 4th, 1960, from Mr. E. H. Silk, Assistant Deputy Attorney General, Province of Ontario, to Commissioner Dr. J. D. Bateman.

No. 130 Brief of Ontario Department of Labour, dated November, 1960.

No. 131 Pamphlet, "Guide to Services", Ontario Department of Labour.

No. 132 Verdict of Coroner's Jury in re Hogg's Hollow Inquest, having to do with the death of Pasquale Allegrezza.

No. 133 "Operating Engineers Handbook", Ontario Department of Labour.

No. 134 Memorandum dated September 21st, 1960, from Mr. R. Turton, Chief Factory Inspector, Ontario Department of Labour, to Mr. C. G. Gibson, Director of Technical Services, Ontario Department of Labour, re foundry tunnel, Canadian General Electric, Lansdowne Avenue, Toronto.

No. 135 Memorandum dated September 21st, 1960, from C. H. Wilson, M.D., Ontario Department of Health, to Mr. C. G. Gibson, Director of Technical Services, Ontario Department of Labour.

No. 136 Memorandum dated September 20th, 1960, from Mr. R. Turton, Chief Factory Inspector, Ontario Department of Labour, to Mr. C. G. Gibson, Director of Technical Services, Ontario Department of Labour, re Canadian Westinghouse Ltd., Hamilton; memorandum dated September 22nd, 1960, from Mr. D. F. McLean, P.Eng., Ontario Department of Labour, to Mr. C. G. Gibson, Director of Technical Services, Ontario Department of Labour, re Canadian Westinghouse Ltd., Plant No. 2, Hamilton; diagram of television tube conveyor, Canadian Westinghouse Ltd., Hamilton.

No. 137 Memorandum dated September 20th, 1960, from Mr. R. Turton, Chief Factory Inspector, Ontario Department of Labour, to Mr. C. G. Gibson, Director of Technical Services, Ontario Department of Labour, re fatality—Electro-Metallurgical Division of Union Carbide Canada Limited, Welland.

No. 138 Memorandum dated September 21st, 1960, from Mr. R. Turton, Chief Factory Inspector, Ontario Department of Labour, to Mr. C. G. Gibson, Director of Technical Services, Ontario Department of Labour, re Canadian General Electric, Guelph.

No. 139 Memorandum dated September 22nd, 1960, from Mr. D. F. McLean, P.Eng., to Mr. C. G. Gibson, Director of Technical Services, Ontario Department of Labour, re Canadian Westinghouse Limited, Plant No. 2, Hamilton.

No. 140 Draft copy (dated February 21st, 1955) of proposed Foundry Regulations, Ontario Department of Labour.

No. 141 Copy of letter dated November 6th, 1959, from the Secretary, Dust Problem Committee (on letterhead of C. D. Howe Company Limited), Port Arthur.

No. 142 Letter dated November 23rd, 1960, from Mr. A. R. Morse, Electrical Engineering Section, National Research Council, Ottawa, to Commissioner Dr. J. D. Bateman, re colloidal aspects of dust clouds, with attached copy of letter dated December 21st, 1955, from Mr. A. R. Morse to Mr. E. T. Dawson, Kingston.

No. 143 Copy of letter dated August 30th, 1960, from Mr. John F. Henning, Director, Department of Industrial Relations, State of California, to Department of Labour and Industries, State of Massachusetts, Boston, Massachusetts.

No. 144 Letter dated November 30th, 1960, from Mr. John Furlong, The Institute of Chartered Engineers of Ontario, to the Commission.

No. 145 Final submission of Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, Lodge 650, Elevator Division, with attached copy of letter from that union to Mr. A. J. McKichan, Secretary, Lakehead Elevators Association, Winnipeg, Manitoba.

No. 146 Copy of an address entitled, "Yes, We Believe in Safety", by Mr. R. J. Lamoureux, Director, Safety and Health Division, United Steelworkers of America, Toronto, to the American Society of Safety Engineers, Montreal, Quebec.

No. 147 Photograph of side trench, with attached copy of letter dated October 24th, 1960, from Mr. W. H. Hopper, Special Executive Representative, Workmen's Compensation Board, to the Commission Secretary.

No. 148 Photograph of two workmen in side trench shown in Exhibit No. 147.

No. 149 Photograph of large trench, with two workmen depicted in the foreground.

No. 150 Photograph of trench depicted in Exhibit No. 149.

No. 151 Photograph of trench depicted in Exhibit No. 149, showing backhoe in process of excavating earth.

No. 152 Photograph of trench depicted in Exhibit No. 149, showing backhoe in process of excavating earth.

No. 153 Clipping from the Toronto Daily Star dated November 22nd, 1960, entitled, "Metro News Briefs—English Studies Skipped by Newcomers—Survey".

No. 154 Engineering Data Sheets, Ontario Department of Labour.

No. 155 Letter dated November 25th, 1960, from Mr. C. G. Gibson, P.Eng., to the Commission; draft copy of Regulations made by the Minister under *The Department of Labour Act* (Ontario); suggested topics to be included in regulations respecting tunnels, open caissons, coffer dams and crib work, and compressed air work; copy of memorandum dated May 20th, 1960, from Dr. F. M. R. Bulmer, Division of Industrial Hygiene, Ontario Department of Health, to Mr. R.

Turton, Chief Factory Inspector, Factory Inspection Branch, Ontario Department of Labour; memorandum dated November 23rd, 1960, from Mr. R. Turton, Chief Factory Inspector, Ontario Department of Labour, to Mr. C. G. Gibson, Director of Technical Services, Ontario Department of Labour.

No. 156 Copy of memorandum dated June 21st, 1960, from Mr. C. G. Gibson, P.Eng., Director of Technical Services, Ontario Department of Labour, to caisson inspectors, Ontario Department of Labour.

No. 157 Copy of draft regulations (dated July 18th, 1960) made by the Minister under *The Department of Labour Act* (Ontario).

No. 158 Construction company instruction badge (metal) issued to workers in compressed air.

No. 159 Circular dated October 31st, 1960, re *The Construction Hoists Act, 1960-61*, signed by C. G. Gibson, P.Eng., Director of Technical Services, Ontario Department of Labour; first draft (October 24th, 1960) of Act to provide for the Regulations and Licensing of Hoists used during the Construction, Alteration or Demolition of Buildings, Structures and Other Works.

No. 160 Second Interim Report of the Committee to Examine the Roll of Provincial Labour Departments in the field of Industrial Safety and Health, to the Canadian Association of Administrators of Labour Legislation.

APPENDIX "E"

VERDICT OF THE CORONER'S JURY IN THE HOGG'S HOLLOW INQUIRY

Report of Coroner's Jury Summoned to enquire into the death of Pasquale Allegrezza.

We, the jury, find that the cause of death was acute poisoning by carbon monoxide and suffocation due to the inhalation of smoke, sand and water. The accident took place in the vicinity of Yonge Street and York Mills Road in the Township of North York, as a result of a fire in an underground tunnel on the 17th March, 1960 at approximately 6 o'clock in the afternoon. The death of Pasquale Allegrezza took place on March 17th, 1960 between the hours of 7 o'clock and 9 o'clock p.m.

We, the jury, having spent three days listening to the evidence in this inquest, are impressed with the depth and thoroughness of the investigation leading to the presentation of the evidence, and we would commend the Metropolitan Police and the Attorney General's Department for the able manner in which they conducted the investigation of this tragedy, and for the meticulous manner in which the evidence was presented. The death of Pasquale Allegrezza and his fellow workers is the inevitable result of the failure to implement and enforce regulations made under The Department of Labour Act governing the protection of persons working in compressed air.

While it is evident that negligence of these regulations was responsible for this tragedy, any attempt to attach individual blame in this instance would serve no public good, for the evidence is clear that similar conditions exist in an irresponsible segment of the industry engaged in sub-surface construction.

The ignorance of the workers themselves of the legislation designed for their protection, the failure to implement protective regulations by sub-surface contractors and their agents, and the lack of corrective enforcement by inspectors of the Department of Labour, have combined to create a condition of hazard to the individual worker. Had these conditions not existed, this jury is of the opinion that the fire in the tunnel could have been controlled without fatal consequences.

Further, there does not exist under the authority of the Department of Labour Act any rescue organization applicable to sub-surface operations, and it is also the opinion of this jury that had such an organization existed, similar to the mine rescue crews, skilfully trained under the provisions of the Mining Act, that Pasquale Allegrezza and his companions could have been brought to safety. The heroic efforts of fellow workers to reach these men were frustrated by lack of rescue training, inadequate knowledge of equipment and facilities, and complete absence of organized direction. According to the evidence presented, almost all the safety regulations governing this tunnel project were violated at one time or another, and many of the regulations were violated continuously. The attitude of the management towards the safety of the individual worker can be described as no less than callous. Many of the workmen both on surface and underground were inexperienced, untrained or unqualified for the work to which they were assigned. Several of the foremen were not sufficiently competent to be entrusted with the instruction or direction of the workmen. It was evident that most foremen were uninformed of the Department of Labour regulations governing safety requirements.

The regulations as they now stand are in need of revision and improvement. They were last consolidated in 1944, and apparently not amended since 1926. The regulations failed to provide any provisions relating to the hazards of combustion in compressed air. The evidence of the compressor operators as to pressure maintenance, the evidence of the lock tenders as to control of decompression, and the testimony of the foremen, indicates that generally they acted on their own initiative or judgment without instruction from superiors.

In the construction industry, particularly on this project, a great number of workers unable to speak English are employed. This creates a problem of communication, but there is no evidence that pertinent sections of the regulations were posted in proper locations in English, let alone any other language. This particular situation was aggravated by a management relationship that developed such confusion that even the management themselves were not sure of their responsibility and authority. As a result, on the night of the fire, rescue efforts were not subject to any overall co-ordination by management. During the height of the confusion following the fire, someone shut off the compressors, and as a result the workings were decompressed, which resulted in water and silt entering the tunnel. Testimony has been presented to show that the resulting smoke, gases and heat could have been dissipated by developing circulation without a material loss of pressure. In other words, rescue operations could have been initiated without the serious impedance caused by the influx of water and silt. While decompression may have been an error in judgment, a much more serious error was the failure of management to predetermine a course of action in the event of such an emergency.

The Department of Labour Inspector testified that there are only three inspectors engaged in this work for the Province of Ontario. While management cannot abdicate their responsibility by delegating it to a government inspector, it would appear that three inspectors are completely

inadequate. It is apparent from the testimony that on this tunnel project a change in management occurred at least twice. It is not clear that approval was given by Metro engineers or Metro's consulting engineers to the changes which occurred. Information as to who was the authorized superintendent on the job was not supplied to the persons who were directly concerned with the inspection and completion of construction of this project.

As a result of these considerations, we, the jury, make the following recommendations in the strongest terms:

That the regulations of the Department of Labour Act be revised, improved and amended to ensure the safety of the worker in compressed air. Such amendments should include special provisions relating to combustion under pressure, the wearing of non-flammable clothes by welders, the prohibition of the use of portable electric cables covered with combustible insulation, already prohibited under the regulations of the Mining Act.

Minimum standards of qualification for lock tenders, compressor operators and others assigned to responsible tasks, and such other safeguards as are deemed desirable after an exhaustive study of the conditions of work in compressed air by the Department of Labour, in consultation with labour and industry.

That sub-surface rescue training organizations comparable to the mine rescue stations be established under the authority of the Department of Labour in such Metropolitan centres as are deemed advisable following a study of rescue requirements.

That where a majority of the workers on a project are of a language group other than English, that safety literature, posters, posted instructions and warnings be printed in two languages.

That the Department of Labour be directed to provide and enforce inspection adequate to ensure the safety of sub-surface workers.

It is recommended in cases of this kind, where a contractor has failed to complete a project, that the authority which called for and awarded the original contract should be responsible for assuming that the job is completed by persons qualified to do so.

Dated this 2nd day of April, 1960.

DR. D. K. MCATEER,
Coroner

Signed:

J. D. BATEMAN (Foreman)
DAVID L. CAMPBELL
MRS. GRACE DEGUERRE
DOUGLAS HAMILTON
JOHN M. DETORO.

APPENDIX "F"

ACCIDENT FREQUENCY RATES* — ONTARIO AND ALL CANADA 1955 TO 1959

Year	Logging		Mining		Selected Manufacturing		Construction		All Industries Reported	
	Ontario	Canada	Ontario	Canada	Ontario	Canada	Ontario	Canada	Ontario	Canada
1955	83.4	64.9	32.1	44.8	40.7	34.0	27.0	31.1	36.3	43.2
1956	70.2	58.3	42.0	48.7	26.5	34.4	26.7	28.7	33.7	38.3
1957	76.3	51.4	39.2	42.2	50.9	39.7	30.9	30.1	40.7	38.1
1958	56.9	72.2	36.4	52.2	17.9	25.6	40.7	41.5	33.6	41.0
1959	72.4	82.3	31.4	39.4	21.6	26.3	52.5	42.0	40.1	40.3

*Number of settled accident claims where claimant was unavailable for work as a result of the accident for seven calendar days or more exclusive of day of accident; expressed in terms of 1,000,000 man hours of exposure to accident.

Source: Federal Provincial Industrial Work Injury Statistics Programme.

APPENDIX "G"

National Building Code, 1960

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APPENDIX "H"

VERDICT OF THE CORONER'S JURY IN THE BLOOR STREET SUBWAY INQUIRY

RE: DEATH OF JOHN BLANEY

We the jury, find from the evidence submitted that John Blaney, age 29, came to his death in the Toronto Transit Commission, Bloor Street Subway, Section BY 104, about 2.30 a.m., on the 27th of May, 1961, from multiple crushing injuries of the head, trunk and extremities with rupture of multiple thoracic and abdominal organs with evisceration through right thorax. Fractures of skull and spine with lacerations of brain and spinal cord.

We are of the opinion that death was caused as the result of injuries received when crushed by tons of steel and concrete while at work.

The deceased was employed by Frankel Steel Construction Ltd., 60 Modern Road, Scarboro, Ontario.

The accident occurred about 8.45 p.m., on 26th of May, 1961.

From the evidence produced, we find the death of one John Blaney resulted from the lack of adequate and improper bracing and the improper installation of formwork.

We feel the form designs as supplied by Frankel Steel Construction Ltd. did not employ sound and practical engineering principles for this particular application.

The aforementioned does not relieve in any way the General Contractor, McNamara-Raymond, from their full responsibility as prime contractor as set out in Section 10703 of the General Specifications of the U-3 Contract.

The Toronto Transportation Commission, as designers of the U-3 Contract, must accept their responsibilities for the proper supervision of the entire contract. We feel they have failed to provide this.

Therefore we find negligence on the part of all three Companies concerned namely:

Frankel Steel Construction Ltd.,
McNamara-Raymond,
Toronto Transit Commission.

Therefore the Jury recommends very strongly:

That the Provincial Government of the Province of Ontario adopt and rigidly enforce the National Building Code, 1961 Edition, and add to or amend such code to contain the following provisions:

A. That all construction in the Province of Ontario be carried out under the National Code, and/or Municipal Codes or by-laws, where such codes are in effect.

B. That a directive be made to the Metropolitan Building Codes Committee that all concrete formwork should be designed for the loads it will receive and support from any lateral or vertical forces, by a qualified structural Engineer.

C. That the Municipal and Provincial authorities should provide experienced and adequate inspectors to enforce adherence to the codes or by-laws at the sites of the projects.

D. Appropriate reservations could be made to ensure that the engineer does not in any sense, assume or relieve the contractor of the contractual and financial responsibility for the adequacy of the contractor's proposed procedures and temporary works whilst the contractor retains full freedom of choice of erection, methods and procedure. The examination by the engineer nevertheless constitutes an additional means of discovering any latent engineering design or computation errors which may have escaped the notice of the contractor's own checking arrangements.

We would further recommend:

That all future concrete pours to be made on any sub-structures or super-structures in the future, shall be governed by the aforementioned recommendations.

This verdict or finding received by me this 6th day of July, 1961.

MORTON SHULMAN,
Coroner, for the City of Toronto.

Signed: JAMES E. LUMLEY
MURRAY A. ELIAS
THOMAS B. SHELDON
ARTHUR D. MIDDLETON
HAROLD E. WITMER.

APPENDIX "I"

ART. 15

MINES AND TUNNELS; QUARRIES: COMPRESSED AIR

(Labour Code, New York State)

* 430. *Working time and rest periods.* The working time in compressed air in any twenty-four hours shall be divided into two shifts with a rest interval between shifts which shall be in open air, except for the period of decompression required by section four hundred thirty-one. Persons who have not previously worked in compressed air shall not work therein more than one shift during the first twenty-four hours. No person shall be subjected to pressure exceeding fifty pounds except in emergency. The maximum number of hours of each shift and minimum rest interval between the shifts for any pressure, as given in columns one and two of the following table, shall be as set opposite such pressure in columns three, four and five.

SHIFTS AND REST PERIODS WITHIN EACH TWENTY-FOUR HOURS

PRESSURE		HOURS		
Column 1	Column 2	Column 3	Column 4	Column 5
Minimum number of pounds	Maximum number of pounds	Maximum total working time	Maximum shift in compressed air	Minimum rest interval
Normal	to 22	6	3	2½
over 22	" 30	4	2	3½
" 30	" 35	3	1½	4
" 35	" 40	2	1	4½
" 40	" 45	1½	¾	4¾
" 45	" 50	1	½	5

* 430 as last amended by L1957, C944, eff. July 1, 1957.

APPENDIX "J"

November 25, 1960.

SUGGESTIONS FOR REGULATIONS ON TUNNELS, ETC.

FIRE PROTECTION

(1) Means of extinguishing fire shall be provided in clearly visible and readily accessible locations:

(a) not over 50 feet from the working face,

(b) in every caisson, shaft and tunnel station, and

(c) in every building or structure of the works.

(2) Fire extinguishers shall be of a type suitable for extinguishing fires at the works:

(a) in ordinary combustible materials such as wood, or

(b) in oils or greases and electrical equipment,

and shall be provided according to the size and type of likely source of fire.

(3) No fire extinguisher containing carbon tetrachloride, methyl bromide or other toxic material shall be provided.

(4)—(1) Every extinguisher containing water shall be protected from freezing.

(2) Every extinguisher shall be:

(a) recharged immediately after use, and

(b) returned to its designated position ready for use;

(c) inspected at least monthly.

(5)—(1) Subject to subregulation (2), a standpipe and a supply of water at a steady pressure suitable for efficient operation of the nozzle shall be installed:

(a) within fifty (50) feet of the working face,

(b) in every caisson, shaft and tunnel station, and

(c) in every building or structure on the surface level of the works.

(2) Subsection 1, or any part of it, shall not apply where the inspector is satisfied that:

(a) no fire hazard exists,

(b) the size of the excavation is too small to permit installation or safe use of a fire hose, or

(c) alternative means of extinguishing fire, satisfactory to the inspector, is provided

(6) Fire hose shall be:

(a) at least 1½ inches nominal diameter,

(b) have a suitable nozzle,

(c) be so stored, when not in use, to prevent its being damaged, and

(d) be connected to the standpipe so that lays of not over 50 feet will reach all combustible material.

(7) Where there is danger of the standpipe freezing, it may be of the dry type.

(8) Every standpipe shall have a Siamese connection installed, so that the municipal fier department may also supply water to the standpipe.

(9) The method of:

(a) sounding or giving a fire alarm throughout the works, and

(b) summoning the municipal fire department,

shall be prominently posted through the works.

(1) (a) Every reasonable precaution shall be taken to prevent fire in or about the works.

(b) Where the air is compressed, extra care shall be exercised to prevent ignition of any combustible material.

(2) Waste timber, empty boxes, paper or combustible rubbish of any kind shall be removed daily from all parts of the works and disposed of in a safe manner.

(3) No combustible equipment such as welding cable or air-hoses shall be stored underground unless required for immediate use.

(4) No person shall take underground or use any portable electric cable unless it has an armoured or non-flammable casing.

(5) (a) When welding or flame cutting is being done on the works there shall be a person with a fire-hose or approved extinguisher, watching for and readily available to immediately extinguish any fire.

(b) Operators of welding or cutting equipment shall wear clothing that will resist ignition by hot metal.

(6) Acetylene shall not be taken into compressed air.

(7) No person shall smoke in compressed air, or in any place in the works designated by the inspector.

(8)—(1) Subject to subregulation 2, any flammable liquid, except lubricating oil or gas, shall be stored:

(a) in a suitable building or storage tank,

(b) not less than 100 feet from any shaft, tunnel, caisson, coffer dam or crib work, and

(c) not less than 300 feet from an explosives magazine.

(2) Lubricating oils shall be stored:

(a) in a suitable building or storage tank,

(b) not less than 50 feet from any shaft, tunnel, caisson, coffer dam or crib work.

(9) No tank supplying liquid fuel by gravity flow shall be installed or used where any oil may escape within 100 feet of any shaft, tunnel, caisson, coffer dam or crib work.

(10) Any portable container used for flammable liquids with a flashpoint less than 105° F. shall have a closed top, flexible spout and a safety screen.

C. G. Gibson.

APPENDIX "K"

November 23, 1960.

MEMORANDUM TO :

MR. C. G. GIBSON,
Director of Technical Services,
Department of Labour.

Since completion of a draft of amended regulations relating largely to decompression and working time in compressed air, in May of this year, I have held meetings with the caisson inspectors to discuss various improvements which may be included as amended regulations under The Department of Labour Act respecting the safety of persons employed in tunnels, compressed air, caissons, coffer dams and crib work. Some of these recommendations may have been presented to the Royal Commission in one form or another.

Some of the recommended amendments are not included in the present regulations, but are, in our estimation, important enough to be considered favourably by the Commission.

(1) Manlock in connection with compressed air work should be required to be in charge of a lock tender. In addition the experience and qualifications of the lock tender should be specified in the regulations.

(2) Compressed air working chambers should be equipped with an exhaust line not less than 2" in diameter to exhaust water, gases, fumes or foul air.

(3) Amended regulations should include a definite standard as to the type of air compressors to be used for compressed air work and the amount of air to be delivered by and type of standby emergency equipment necessary.

(4) Relief or "pop" valves should be required to prevent a build up of air pressure in the working chamber due to the use of pneumatic tools or other causes.

(5) The design, size and minimum approved pressure for medical locks should be specified in the regulations.

(6) Notices, abstracting some of the more important sections of the regulations should be required to be posted.

(7) Specific protective clothing in the form of safety helmets, shoes, goggles, should be required in the regulations as well as a requirement on the part of the employee to comply with the use of such equipment provided for his safety and comfort.

(8) Accidents, cave-ins, health hazards and other incidents affecting the health and safety of employees should be required to be reported by the employer to the Department. This would enable administrative personnel to determine the most frequent and hazardous situations likely to cause accidents, and when recorded would act as a guide for further necessary amendments or alterations to regulations.

(9) The use of gasoline and Diesel powered equipment should be regulated for use in tunnel work.

(10) In the event that compressed air and tunnelling work becomes more prevalent, special regulations relative to safety precautions necessary for subaqueous tunnelling should be provided.

(11) Specific regulations covering the handling, storing and use of explosives should be included in amended regulations.

(12) A regulation requiring the employer to provide gas detection and rescue equipment and certain employees to be instructed in their usage should be considered in new regulations.

(13) A regulation requiring:

(a) A three-door manlock; or

(b) A mechanical means of closing the inner door of a two-door manlock from the normal air pressure side of lock,

would enable rescue crews, doctors, firemen and other personnel to enter the air chamber without reducing the air pressure, which would be a definite advantage in case of an emergency.

(14) Regulating the maximum distance to be allowed between the face of tunnel and the air lock or alternately, provision of a bulkhead between the air lock and face of the tunnel, would ensure employees safety in the event that unexpected soil conditions were encountered in a long tunnel.

These recommendations are a few of the more important ones which the inspectors have brought forward for consideration in order to provide for a more uniform and safe standard for this type of work.

"R. TURTON",
Chief Inspector.

APPENDIX "L"

TWENTY CAUSES OF ESCALATOR ACCIDENTS

ONTARIO

Fiscal Year 1957-58

	No. of Persons Involved (Including Persons Not Injured)
1. Fell while riding (lost balance)	91
2. Pushed, knocked over, or stepped on	63
3. Shoe or rubber caught in combplate	38
4. Fell while riding	30
5. Fell while boarding	26
6. Unknown and miscellaneous	26
7. Caught fingers or glove under handrail	25
8. Fell while getting off	13
9. Fell while riding (stooped to aid child, or fell over child)	13
10. Fell while walking or running on moving escalator	10
11. Fell while riding (escalator stopped, went in reverse or jerking motion)	10
12. Clothing caught	10
13. Fell trying to ride in opposite direction	9
14. Sat on step	8
15. Fell while riding (carrying parcels)	6
16. Fell while riding (stopped to pick up object)	3
17. Stepped on crack of two steps	3
18. Fell while boarding (artificial limb or cane)	2
19. Fell while riding (artificial limb or cane)	1
20. Lost grip on handrail	1
	388
Number of accidents	334

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Ontario. Royal Commission
on Industrial Safety
Report

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